

# NETWORK WORLD

The Newsweekly of User Networking Strategies

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## Iowa T-3 net is a political hot potato

By Bob Brown  
Senior Editor

DES MOINES, Iowa — The Iowa Senate last week voted to postpone construction of a \$112 million, statewide T-3 network due to concerns about cost and network design.

The Senate vote to delay the network at least until January 1992 is the latest in a series of political setbacks for what is believed to be one of the largest state nets ever proposed — bigger than the California and New York state networks combined.

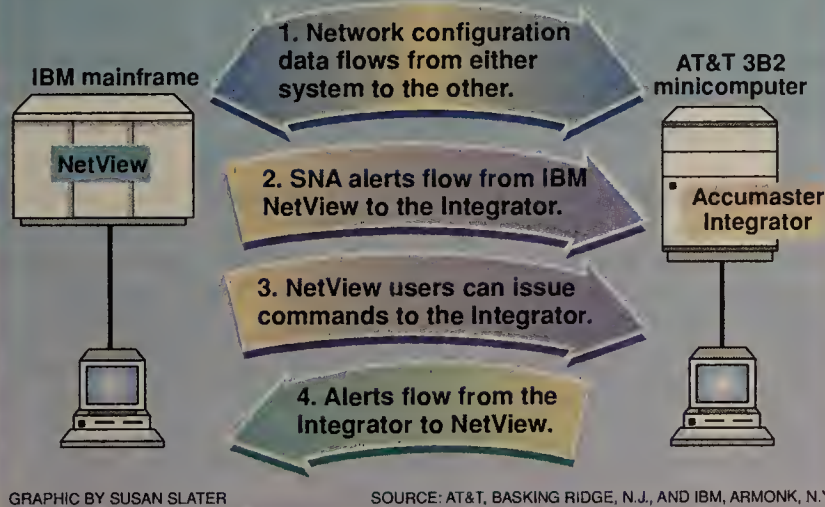
The Iowa Communications Network would carry voice, data and full-motion video traffic, and is intended to improve the quality of the state's educational system and efficiency of government operations.

In 1987, the Iowa General Assembly contracted with a consultant to design a network supporting video distribution of educational courses to remote schools. Since then, the plan has undergone multiple modifications and two unsuccessful rounds of bids — one that was judged fatally flawed and illegal, and another in which all bids were rejected as being too costly.

The ultimate fate of the net-  
(continued on page 51)

## AT&T, IBM tie the net management knot

AT&T and IBM last week announced plans to provide links between their integrated network management systems that will initially support these functions:



## System One finds freedom in cooperative processing

Pioneering LAN user is building for the future.

By Paul Desmond  
Senior Editor

MINNEAPOLIS — Two years after deploying its first major LAN-based application, System One Corp. has labeled the project a success and says it sees no limit to the potential of its new cooperative processing architecture.

The cooperative processing platform allows the reservation network services company to increase computing power as needed and enables it to add applications faster by simplifying the development and testing process.

"Two years ago, using a PC LAN as a computing platform was an experiment. We didn't know if we could make it work," said Curtis Abraham, staff applications specialist for System One's Airplan Services unit located near here. "What's news is that we can, and we don't see any major roadblocks [ahead]."

System One is the reservation network owned by Continental Airlines Holding Corp., the parent company of Continental Airlines, Inc. Airplan Services was  
(continued on page 6)

## IBM, AT&T join hands in net management

Giant rivals agree to develop software linking NetView and Accumaster Integrator products.

By Paul Desmond  
Senior Editor

NEW YORK — AT&T and IBM last week put user concerns above competitive differences by jointly developing software that enables their integrated network management systems to work in unison.

The software will make it easier for users that employ both IBM's NetView and AT&T's Accumaster Integrator to control one system from the other and to swap alerts and configuration data between the two. Although initial links will be based on existing protocols, the companies have vowed to embrace Open Systems Interconnection protocols to support communications between the systems.

AT&T and IBM said they teamed up to meet the needs of mutual customers.

For user and vendor reaction to the AT&T/IBM alliance, see pages 48 and 49.

"The spirit of cooperation fostered through the standards bodies and the [OSI]/Network Management Forum means good news for all of our users. In the

interest of our mutual customers, IBM and AT&T are fulfilling the spirit of that cooperation with this announcement," said Bill Warner, director of network management in IBM's Communication Systems division.

(continued on page 48)

## Frame relay service plans

Carrier	Availability	Access options
Williams Telecommunications Group, Inc.	Now	T-1
CompuServe, Inc.	June	56K
Sprint Data Group	3Q	56K, 64K, fractional T-1, T-1
BT Tymnet, Inc.	3Q	56K, 64K

SOURCE: NETWORK WORLD  
GRAPHIC BY SUSAN SLATER

## WilTel first to deliver on frame relay

By Bob Wallace  
Senior Editor

TULSA, Okla. — Williams Telecommunications Group, Inc. (WilTel) last week became the first long-haul carrier to announce general availability of a public frame relay service.

WilTel's service, dubbed WilPak, gives the company an edge over other carriers, which have announced but not yet delivered frame relay.

"This makes WilTel the market leader in delivering frame relay service and will give it an important advantage over its competitors," said Nick Lippis, a principal with Northeast Consulting Resources, Inc., a Boston consultancy.

Frame relay is an emerging ANSI and Consultative Committee on International Telephony and Telegraphy standard that de-  
(continued on page 46)

## NETLINE



**NETWORK GENERAL'S** new Sniffer Server enables users to monitor LANs at remote sites. Page 4.

**DEC, IBM FORM ALLIANCES** with leading router manufacturers. Page 4.

**BELGIUM'S RTT SLASHES** service rates to U.S., reducing price differences among European carriers. Page 4.

**APPLE'S PCN PROPOSAL** for wireless LANs draws criticism on technical fronts. Page 6.

**ATTEMPTS BY** Transportation Department to change airline reservation net rules comes under fire from SABRE. Page 6.

**ANNOUNCING** the National Networking Institute. Earn an advanced degree while at home. Page 50.

## FEATURE



## EDI: Bottom-line booster or budget-breaker?

By Salvatore Salamone  
Features Writer

For an ambitious network manager, implementing electronic data interchange — the paperless transmission of orders, bills and other standard documents between companies — is likely to be both a challenge and an opportunity to demonstrate management skills.

Because EDI can directly increase sales and improve cash management, a well-executed

EDI project can significantly improve the company's bottom line, showing how valuable the manager is to the organization. EDI projects can also let managers demonstrate a grasp of nontechnical areas, such as law and finance.

The challenge is that EDI has some tricky legal problems — particularly international EDI — and is difficult to cost-  
(continued on page 31)

Trends and TECHNOLOGIES  
RESHAPING networks:

# DEC to incorporate systems management into its EMA

Announcement slated for this week to outline strategy, new products for systems management.

By Jim Brown  
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. is expected this week to announce its strategy for adding remote systems management functions to its Enterprise Management Architecture (EMA), as well as the first products supporting the plan.

While viewed mainly as DEC's integrated network management architecture, EMA was designed to support management of systems attached to the network as well, analysts said. During the next five years, DEC will flesh out EMA with systems management facilities required by users.

Analysts said DEC is likely to introduce a version of its Remote System Manager software that will run under DEC Management Control Center (DECMCC) Director, which is the flagship EMA product.

Remote System Manager runs on a central VAX and enables administrators to perform system management tasks on remote VAXes. These tasks include downloading new or upgraded software, backing up files and checking system configuration.

DEC will also likely announce plans to add support for the Open Software Foundation's (OSF) *(continued on page 7)*

# Firms bypass Internet ban on nonresearch traffic

Net operators link up independently of Internet.

By Ellen Messmer  
Washington Correspondent

SAN FRANCISCO — Three network service providers last week pledged to join forces to give commercial users a way to exchange nonresearch data banned from the Internet.

General Atomics, Performance Systems International, Inc. (PSI) and UUNET Technologies, Inc. operate networks that are currently interconnected via the Internet.

Today, the three nets support nearly 100% of the commercial Transmission Control Protocol/Internet Protocol and Open Systems Interconnection inter-networking services in the U.S.

However, rules prohibit private companies from exchanging non-research data over the Internet so the three companies have pledged to link their facilities independent of the Internet.

General Atomics' California Education and Research Federation Network (CERFnet), PSI's PSInet and UUNET's AlterNet are scheduled to be linked here by a series of routers and T-1 circuits within two months.

The Internet, a group of regional nets linked by the National Science Foundation Network backbone, is largely funded by the government for the exchange of research information. Because *(continued on page 47)*

# Vendors rallying to push open document standard

By Bob Brown  
and Ellen Messmer  
Network World Staff

BRUSSELS, Belgium — A group of the world's largest computer companies will announce here tomorrow the formation of a consortium to promote development of products supporting the Office Document Architecture (ODA) standard, *Network World* has learned.

Such an effort could hasten availability of products supporting ODA, an International Standards Organization (ISO) specification allowing for the uniform exchange of compound documents comprised of text, graph-

ics and other components among disparate systems.

Digital Equipment Corp., Groupe Bull SA, IBM and Unisys Corp. last week acknowledged their participation in the ODA Consortium. Siemens Nixdorf Informationssysteme AG, ICL and other companies are also expected to participate in the consortium, according to Leon Surleau, manager of the office automation development team at Groupe Bull.

Initially, the consortium plans to agree on a uniform implementation of ODA and offer software developers a tool kit to spur ap- *(continued on page 7)*

## Briefs

### Timeplex enhances Link+ muxes.

Timeplex, Inc. last week announced support for 8K bit/sec voice compression on its Link+ family of T-1 multiplexers. The feature will be supported by a new \$5,000, four-port I/O card or by a \$10,000 voice server module supporting a maximum of 31 channels.

Timeplex also enhanced its TimeView/2000 net management system so users can utilize multiple copies in order to divide network management by region or redirect central control of the net according to the time of day. Additionally, Timeplex announced that users will be able to link two of its high-end Link/100+ multiplexers in order to build nodes that support as many as 48 T-1 or 48 European T-1 lines, up from 28 T-1s and 23 E-1s.

### IBM plans cutbacks, takes charge.

IBM last week said it plans to phase out more than 10,000 jobs via attrition as part of a long-term restructuring to improve operating efficiencies. The company said that about 6,000 positions will be eliminated from its U.S. operations while the rest will come mostly from European operations. IBM will reduce its payroll by another 4,200 workers as a result of last week's sale of its printer and typewriter business to Clayton & Dubilier, Inc. IBM also said it will take a whopping \$2.3 billion charge against first-quarter earnings as the result of adopting a new accounting rule for setting aside funds to pay for current employees' retirement benefits. That charge is expected to result in a large first-quarter loss, analysts said.

**"Free the Bells" bills advance.** A bill introduced by Sen. Ernest Hollings (D-S.C.) that would lift the manufacturing ban from the regional Bell holding companies was recently voted from the Senate Commerce Committee to the Senate floor, clearing the stage for a Senate vote. During the same week, two new bills were introduced in the House that also propose to lift the manufacturing restrictions on the RBHCs. While momentum may ultimately result in passage of legislation to lift the ban, serious obstacles remain.

Members of the Senate Judiciary Committee have antitrust concerns about letting the RBHCs into manufacturing and want to review the Hollings bill.

And the White House said it thinks that the bill is protectionist because it requires 60% of manufacturing to be performed domestically by the Bells. Of the House bills, the first, introduced by Jim Slattery (D-Kan.) and Billy Tauzin (D-La.), is a companion bill to the Hollings legislation. The second, offered by Rep. Michael Oxley (R-Ohio), is similar to the first but does not contain a domestic manufacturing clause.

### New attitude in AT&T-NCR impasse.

Top executives at AT&T and NCR Corp. last week made conciliatory remarks indicating that a friendly merger agreement could soon resolve AT&T and NCR's bitter four-month battle. The statements came in the wake of AT&T receiving enough shareholder votes at NCR's annual meeting to oust four of that company's 12 board of directors. Robert Kavner, a group executive at AT&T, referred to a new attitude at NCR regarding AT&T's proposed acquisition of the Dayton, Ohio, computer maker. AT&T last week upped its offer from \$90 a share to \$100, amounting to a total bid of \$6.8 billion. NCR, meanwhile, lowered its asking price from \$125 a share to \$110 a share, or \$7.4 billion total.

### Western Digital to sell LAN business.

Standard Microsystems Corp. (SMC) last week said it has signed a letter of intent to acquire Western Digital Corp.'s local-area network business, including its Ethernet and token-ring adapter board lines, for \$33 million. Under the agreement, SMC will acquire Western Digital assets and intellectual properties directly related to its LAN business, as well as licenses for specific LAN applications of Western Digital's more broadly based technology.

**MCI wins alumni pact.** MCI Communications Corp. last week announced it received a contract that could be worth as much as \$1 billion to provide residential services for alumni of more than 97 U.S. colleges and universities. Under the program, MCI will provide members of the Council for Alumni Association Executives (CAAE) a flat 5% discount on long-distance services, provide free MCI calling cards bearing members' school emblems and reimburse CAAE members who pay to switch to MCI as their primary long-distance carrier.

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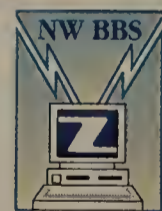
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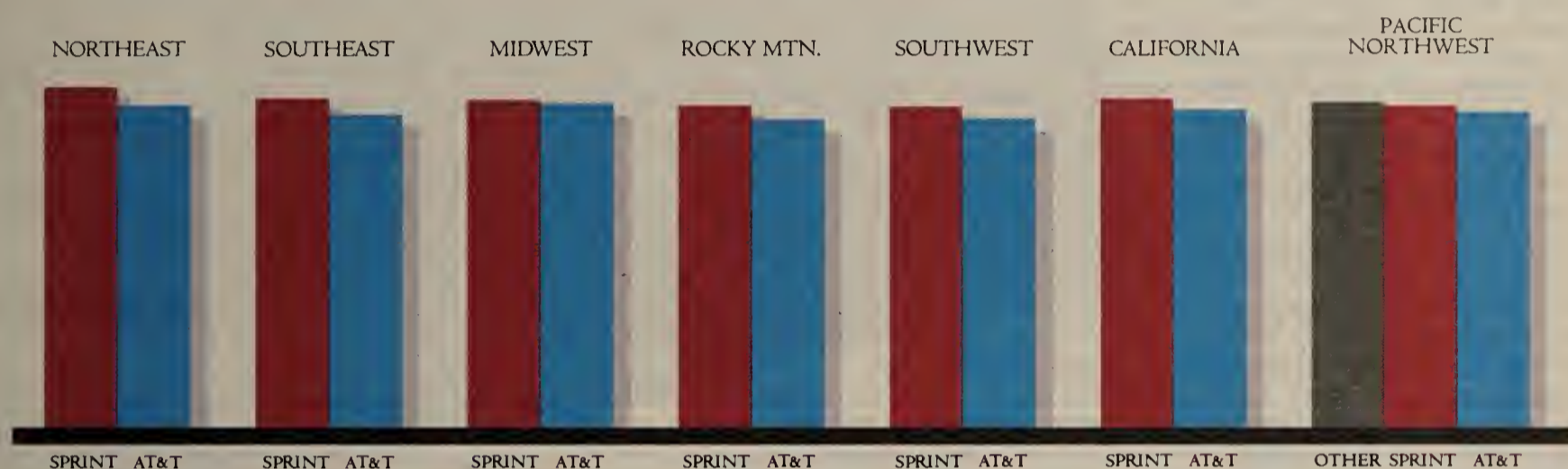
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IT'S A NEW WORLD™

# Sniffer gains distributed management capabilities

Network General unveils Sniffer Server unit to add distributed LAN monitoring and analysis.

By Eric Smalley  
Senior Editor

MENLO PARK, Calif. — Network General Corp. last week introduced an addition to its Sniffer network management product line that supports distributed network monitoring and analysis.

The key component of the company's new Distributed Sniffer System is its Sniffer Server, an unattended Intel Corp. 80386-based device that resides on a local-area network segment, collecting and processing network management data from local devices. The Sniffer Server passes net management data across the network to one or more central management consoles.

The Sniffer Server enables users to monitor LAN activity at remote sites without a network manager being present to inspect the LAN segment in question, as is necessary with the company's older products. The ability to monitor remote segments will lead network managers to be proactive rather than reactive, according to Harry Saal, Network General president.

The Distributed Sniffer System can track traffic on Ethernet, token-ring and wide-area networks, providing seven-layer protocol analysis and event notification.

The other components of the system are monitoring and analysis applications running on the

Sniffer Server, and the SniffMaster Console, a personal computer network interface board and software for use in 80386-based personal computers. Sniffer Servers communicate with SniffMaster Consoles via the Transmission Control Protocol/Internet Protocol or IBM's NETBIOS Extended User Interface protocol. Support for Digital Equipment Corp.'s DECnet, Novell, Inc.'s Inter-network Packet Exchange (IPX) and other protocols is planned.

The Sniffer Servers pass alarms to Simple Network Management Protocol (SNMP) network management stations but do not act as SNMP proxy agents, according to Jay Weil, Network General's director of marketing. The company is also planning to develop hooks to umbrella network management systems such as IBM's NetView and DEC's Enterprise Management Architecture products.

Network General is also planning to develop other applications for the Sniffer Servers, including applications for trend analysis and problem resolution, Weil said.

The distributed architecture will allow users to centralize one of their most scarce resources — skilled network managers, according to David Passmore, a partner in Ernst & Young's Network Strategies consulting practice in Vienna, Va.

Although the distributed architecture is new to Network General, most of the technology in the Distributed Sniffer System is not, Passmore said.

The remote devices are actually just like the previous Sniffer, he said. "They've kind of remotized the [console] and broken up the software into analysis and monitoring applications. It's almost a repackaging job."

That packaging scheme provides users with an option, according to Michael Howard, president of Infonetics Research Institute, Inc., a market research firm based in San Jose, Calif.

Users may not need to implement all of the modules, he said.

Saal said users are going to install Sniffer Servers only on their most critical segments.

"We don't expect customers to immediately install permanent network management servers on every segment," he said.

Also, users will be able to employ Network General's stand-alone Sniffer as a portable Sniffer Server with the next release of the stand-alone product, according to Saal.

Even so, the Distributed Sniffer System is "pricey on a per-LAN basis," Passmore said.

The Distributed Sniffer System is scheduled to be available in June. Sniffer Servers cost from \$4,995 to \$10,995, depending on applications and configuration. The SniffMaster Console costs \$7,995.

Network General is offering two starter kits. A kit with two Ethernet Sniffer Servers, monitoring and analysis software, and a console costs \$19,995. A token-ring version of the package costs \$21,995. ■

# Price cuts level playing field for Europe net hubs

By Barton Crockett  
Senior Editor

BRUSSELS, Belgium — Belgium's national carrier last week announced price reductions averaging about 20% on international private-line services to the U.S.

These reductions, which take effect May 1, will catapult Belgium's Regie des Telegraphes et Telephones (RTT) into the ranks of Europe's least expensive international carriers.

National carriers in other European countries, including Switzerland and Germany, are also slashing international private-line prices. As a result, the price difference between Europe's least and most expensive carriers is narrowing, leading some analysts to argue that price is becoming irrelevant to users deciding where to establish European network hubs.

"There used to be as much as a 50% differential [between the most expensive major European carriers and the least expensive] that caused some users to move hubs to save money," said Leonard Elfenbein, president of the international network consultancy Lynx Technologies, Inc., in Little Falls, N.J. "Now we're down to [a price difference of] 10% or less, which just isn't large enough to justify moving a hub."

According to carrier officials, high-priced European carriers are slashing tariffs in order to keep from losing network hub business to other carriers. Many companies use hubs as traffic concentration and distribution points within Europe, instead of serving each country with private lines from the U.S.

Susan Mirbach, president of RTT Belgian Telecom USA, the RTT's U.S. representative, said the Belgian carrier is cutting private-line prices to keep U.S. users from moving hubs out of Belgium. Mirbach said RTT officials also believe that price cuts will stimulate demand for circuits.

Among other reductions, the RTT is slashing the standard monthly charge for the portion of a Belgium-to-U.S. 64K bit/sec link from 170,000 Belgian francs (\$4,760 U.S.) to 135,000 Belgian francs (\$3,780 U.S.).

Under the current tariff, Belgium's dedicated 64K bit/sec service to the U.S. is more expensive than services from national carriers in France, the Netherlands and Switzerland, as well as services offered by the two British carriers British Telecommunications PLC and Mercury Communications, Ltd.

After the price cut, the RTT's private-line rate will be lower than every one of those carriers except Mercury.

The change will reduce the

price difference between the RTT and the British, Dutch and French carriers for Europe-to-U.S. 64K bit/sec private-line service to less than \$500.

The RTT's price reductions follow drops of 16% to 40% for international digital private-line service from the Swiss post, telegraph and telephone administration that took effect March 1. Germany's national carrier, Deutsche Bundespost Telekom, also plans major international private-line rate reductions in the middle of this summer, according to Donald Hassenbein, vice-president at DBP Telekom, Inc., the U.S. division of the carrier.

Now Deutsche Bundespost Telekom charges roughly 40% more than the British, French and Dutch carriers for 64K bit/sec private-line service. The reduction will make the carrier's rate competitive, he said, but declined to be more specific.

As price differences lessen, other factors, including a carrier's ability to offer custom net deals, are having a greater influence on user hubbing strategies.

Officially, custom network packages are prohibited in most European countries. But Hassenbein said European carriers get around those restrictions by charging tariffed rates for private-line services and then offering steep discounts on equipment collocation and net management services, for example.

Several users said European carriers are getting more aggressive in offering these kinds of custom net packages.

"We've really started seeing a lot more of these Tariff 12-type deals," said a net manager with a major U.S. firm that recently negotiated a custom net deal with several European carriers. The user requested anonymity.

Additionally, many European carriers are considering officially tariffing custom net packages. For example, the RTT is now examining the possibility of tariffing custom net discounts for multiple international services, according to Mirbach. British Telecom and Mercury also are considering tariffing new custom network packages. ■

# DEC and IBM cutting deals with leading router firms

Respond to user push for multiprotocol networks.

By Eric Smalley  
Senior Editor

IBM and Digital Equipment Corp. are forming alliances with two of the leading router makers in efforts to satisfy the rapidly growing demand for equipment needed to build multiprotocol networks.

IBM and Wellfleet Communications, Inc. are in the process of forming an agreement under which IBM will use Wellfleet's routing software on its RISC System/6000 platform, according to sources who asked not to be named.

And DEC's Network Integration Services group has signed an agreement with Cisco Systems, Inc. under which DEC will resell Cisco routers as part of DEC's systems integration push.

Although the DEC-Cisco agreement has been signed, the

IBM-Wellfleet deal has yet to be completed. "IBM and Wellfleet do not have a signed agreement," a Wellfleet spokeswoman said. "Would we be interested in an agreement? Yeah."

IBM recently signed an agreement with Network Systems Corp. to provide a Fiber Distributed Data Interface for the RISC System/6000 and a router configuration of the platform, which would likely have a frame relay interface as well, according to Michael Howard, president of Infonetics Research Institute, Inc., a San Jose, Calif.-based market research firm.

The lack of a multiprotocol router is a "gaping hole in IBM's product line," said David Passmore, a partner with Network Strategies, a consulting practice of Ernst & Young. The deal will allow IBM to develop a multipro-

col router and achieve a reasonable time to market, he said.

Meanwhile, DEC's deal with Cisco provides DEC with a way to meet its users' needs for multiprotocol routing, which DEC has promised to address.

A press release issued last week by Cisco stated that the agreement with DEC involves including Cisco products in DEC's price book. A DEC spokesman, however, said Cisco products will not be included in the book.

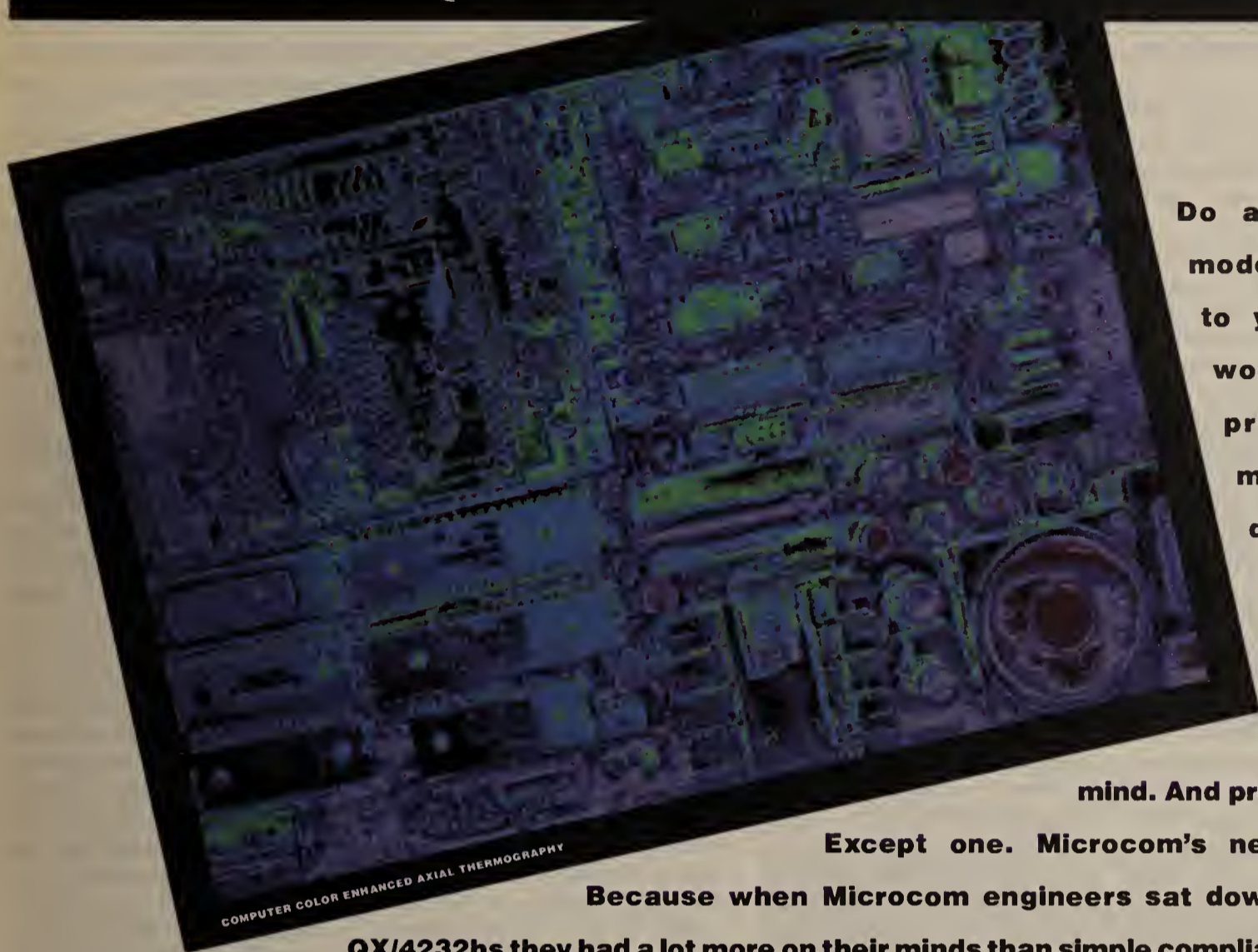
The discrepancy, to be addressed in a statement to be issued next week, is important because the inclusion of Cisco products in DEC's price book would mean that DEC sales representatives could offer those products to their customers. Otherwise, Cisco routers would only be sold by DEC as part of larger systems integration contracts.

If Cisco routers are included in DEC's price book, the deal between Cisco and DEC casts a shadow over Cisco competitor Vitalink Communications Corp. of Fremont, Calif. Vitalink has had a similar agreement with DEC for

(continued on page 6)

**Clarification:** The article "DG offers LAN-based office automation" (NW, Feb. 25) incorrectly implied that the company's Open Systems Office/pc.DAA software is targeted solely at existing users of Data General Corp.'s Comprehensive Electronic Office. The software is also being marketed to Unix and Novell, Inc. NetWare users.

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# Users, vendors critique Apple wireless LAN offer

Protest designation of 40 MHz of radio spectrum.

By Ellen Messmer  
Washington Correspondent

WASHINGTON, D.C. — A torrent of opposing opinions has been generated by the Apple Computer, Inc. petition filed at the FCC last January asking that 40 MHz of radio spectrum be set aside exclusively for wireless local-area networks.

In the first wave of replies filed at the Federal Communications Commission, users and vendors widely disagreed on the benefits of Apple's request to allocate bandwidth between 1,850 and 1,990 MHz for Apple's Data-Personal Communications Services (PCS).

The FCC also granted a last-minute request from NCR Corp. for more time to formulate its remarks and pushed the deadline for initial comments back to April 10. At that time, NCR and a score of other companies, including IBM, are expected to make their views known.

A key industry group, the newly formed 44-member IEEE 802.11 Working Group charged

with developing a wireless LAN standard, is also expected to present the FCC with its viewpoint (see "NCR, IBM judge Apple plan," page 51).

The first round of comments brought condemnation of Apple's Data-PCS proposal from users with private microwave networks that are likely to be displaced if the FCC grants the Apple petition.

Apple had told the FCC the development of LAN personal communications network (PCN) services should not be tied to any requirement to use spread spectrum. Spread-spectrum techniques, which advocates say will allow coexistence of microwave and PCN users, are being tested under several FCC experimental licenses nationwide to determine whether they can effectively prevent interference among users on the same band.

PCN America, Inc., a subsidiary of Millicom, Inc., criticized the Apple position on spread spectrum in its comments, arguing that a better approach would have Apple's proposed service

share frequencies with private microwave users.

Two trade groups, the Association of American Railroads and the Utilities Telecommunications Council, noted that the spectrum in the frequency eyed by Apple is now heavily used by microwave users.

In the event of an FCC decision to establish a 40-MHz band exclusively for wireless LANs, the thousands of microwave users in the utilities and railroad industries would be forced off the bands.

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**The first comments brought condemnation of Apple's proposal from microwave net users.**

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▲▲▲

The Utilities Telecommunications Council demanded compensation for any of the private fixed microwave users that would be affected by displacement.

In a separate letter to FCC Chairman Alfred Sikes, Paul Warnecke, director of the telecommunications division for the state  
(continued on page 51)

## System One finds freedom

continued from page 1

acquired by System One in 1987.

System One's Fare Assurance pricing system and a handful of other reservation-related applications run on a 4M bit/sec IBM Token-Ring Network with about 15 Personal System/2s running Microsoft Corp.'s OS/2 LAN Manager network operating system. The LAN is linked via dual 56K bit/sec lines to System One mainframes in Miami.

Fare Assurance is designed to help travel agents secure the lowest possible fares for clients. Once a reservation is booked, Fare Assurance can find other flights on any airline that meet the traveler's criteria at a lower fare.

A record for each travel agent that participates in the Fare Assurance program is stored in a data base server here running Microsoft's SQL Server.

Each agency also has its own queue on a System One mainframe in Miami.

Ten so-called worker PS/2s here poll the mainframe queues assigned to them by a work server to find outstanding Fare Assurance processing requests.

To process the request, the worker uses Named Pipes to communicate with other parts of the application, which may run on the same or different machines. Altogether, about 60 functions are performed.

"Typically, about 20% to 25% of the time we'll find a fare savings of about \$100 or more," Abraham said.

Many functions are provided by specific software modules that are replicated throughout the network.

For example, separate server modules support the uploading and downloading of mainframe information.

The separation of functions makes it easier to develop and test new applications, said Bruce

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**Fare Assurance is designed to help travel agents get the lowest possible fares for clients.**

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Mayer, manager of application development for System One.

For example, during the past two years, the company has rolled out new dial-up applications that corporate customers can access via CompuServe, Inc.'s public data network.

The new applications were built using many functions that had already been developed and, therefore, did not have to be duplicated or tested.

"These applications became independent, small projects, not

one big project," Mayer said.

"Once a server is built, other clients or servers can access it without us having to retest the service it provides," he said. "That significantly reduces development time."

For example, the download and upload modules used to communicate with the mainframe translate ASCII text into the Airline Link Control (ALC) format used by reservation networks.

"No one here has to worry about ALC anymore," Mayer explained.

"We just deal with that ASCII interface, and we know that the ALC driver will take care of it for us."

Abrahams said, "It's been our goal to build an architecture that's flexible enough that it doesn't become a roadblock [to ideas]."

Because it uses such standard networking mechanisms as Named Pipes and SQL, the architecture gives System One the flexibility to add more or larger machines if necessary.

Should the need arise to greatly expand its data base capacity, for example, a Unix machine could be installed.

"Whatever size machine we need to do the job, we can put in there, and it will still work as it works today with the other machines," Abraham said. "When we look at the future growth of this type of environment, we don't really see major limitations." ■

# American Airlines, SABRE pan plans to level CRS field

Department of Transportation proposals would eradicate edge gained by older reservation nets.

By Bob Brown  
and Paul Desmond  
Network World Staff

WASHINGTON, D.C. — Proposals from the Department of Transportation last week to level the playing field in the airline reservation network arena were strongly criticized by the industry's leading player — the SABRE Travel Information Network.

The Transportation Department wants to extend and strengthen existing regulations that ensure flight information is organized in an unbiased manner and that participation in a computerized reservation system (CRS) be open to all carriers on a nondiscriminatory basis.

The agency has also proposed that every CRS be accessible to travel agents from a single terminal. Other changes would cut the subscription term CRS vendors can require of agents from five to three years and would enable airlines participating in multiple CRSs to drop out of one without facing harsh penalties.

Officials at SABRE and its owner, American Airlines, Inc., said the department's proposals would strip leading CRS vendors of the competitive edge they have gained by getting into the market first and investing in their nets.

"American has invested more than \$1.3 billion in SABRE over the years," said Max Hopper, American's senior vice-president of information systems. "Instead of applauding our innovation and competitiveness, the Transportation Department seeks to penalize American and other successful CRS vendors by imposing regulations utterly unlike those

that govern industries offering similar services."

Officials at Apollo, the second largest CRS, would not comment on the department's proposals specifically. But a spokesman said, "Our position has traditionally been the less regulation, the better." Apollo is owned by Covia Partnership, half of which is owned by United Air Lines, Inc. and the rest of which is owned by USAir, Inc. and other airlines.

The proposals were applauded by System One Corp. and WorldSpan, two CRSs with smaller market shares, as well as a trade group of travel agents.

"We think this is a very pro-competitive move," said a spokesman for WorldSpan, which was formed last year by the merger of CRSs owned by several companies including Delta Air Lines, Inc. and Northwest Airlines, Inc. "It will benefit travel agencies and the traveling public by increasing choices."

That is true, said Al Lenza, vice-president of planning and administration for Continental Airlines Holding Corp.'s System One CRS. "The market has been frozen for about two years," he said. "The cost for agencies to convert has been prohibitive because of the contract practices of the major vendors. It doesn't matter how good a product we built or how good a service System One had, the practices are such that there is very little flexibility for an agency to try our product."

Lenza added that the Transportation Department's proposals should not cause any hardship  
(continued on page 47)

## DEC and IBM cutting deals

continued from page 4

its line of remote Ethernet bridges. That deal was expanded last year to include Vitalink's Internet Protocol router.

Whether or not Cisco products are listed in DEC's price book, the deal between DEC and Cisco raises questions about how quickly DEC can develop its own multiprotocol router. That development effort has been publicly acknowledged by the company as a device that will play a part in DECnet Phase V.

Howard said, "It's possible this is an admission that DEC has taken too long to build a comparable product."

DEC is continuing to develop a multiprotocol router that will support Open Systems Interconnection, the Transmission Con-

trol Protocol/IP and DECnet Phase IV, according to a DEC spokeswoman. That router will be among the first DECnet Phase V products to be announced, she said. In September, DEC officials said DECnet Phase V products would be introduced during an 18-month period.

DEC's multiprotocol router has been expected to debut this summer, according to sources. However, it is unlikely that DEC's Network Integration Services group would sign a short-term agreement with Cisco if DEC's multiprotocol router was nearing completion, said Howard Niden, senior manager of management consulting for Price Waterhouse in New York.

DEC's agreement with Cisco implies a serious slip in the development schedule of DEC's multiprotocol router, a slip of six to 12 months, Niden said. ■

## Vendors rallying to push standard

*continued from page 2*

plication development, Surleau said.

The consortium will also establish an ODA user advisory group, in which users will provide the consortium with input on features they want in ODA products, Surleau said.

Ajit Kapoor, vice-president and director of image management strategies at the META Group, a consulting firm in Westport, Conn., said the ODA Consortium will attempt to get vendors working on the same level to allow the exchange of compound documents across heterogeneous systems. "For the sake of the user community, vendors don't want to come out with

50,000 different versions of ODA," he added.

Currently, no products based on native implementations of ODA exist, although ODA-based gateways and X.400 products are beginning to trickle out. Consortium members intend to not only develop native implementations of ODA, but conversion tools as well, Surleau said.

The consortium also hopes to complete work on an international ODA profile based on the ISO ODA standard, which the group plans to submit as an International Standardized Profile proposal to ISO by year end.

Although ODA has existed as an international standard since early 1989, vendors said they haven't been able to agree on a common profile of the standard.

"The main problem with ODA is that it is so complex," said Michael Millikin, vice-president at Patricia Seybold's Office Computing Group, a consulting firm in Boston. "There are something like eight different ways to code how to do a paragraph indent, for instance. That's why implementation agreements are needed."

Charles Chepeaux, an engineer responsible for ODA development at Paris-based Groupe Bull said joining the consortium signals a commitment from Groupe Bull and other vendors to bring ODA-based products to market.

Other vendors have already begun announcing ODA conversion tools. DEC recently announced at the Hannover Fair CeBIT '91 trade show in Hannover, Germany, its ODA-Compound Document Architecture (CDA) gateway that converts DEC's proprietary CDA files into ODA formats and back again.

In the beginning, the ODA Consortium's work is expected to be most important in Europe, observers said.

"There is a much greater urgency about ODA in Europe, though ODA being part of [Government Open Systems Interconnection Profile Version 2] should make ODA more of an issue here," Millikin said ("GO-SIP 2 may drive vendors to back ODA," *NW*, March 18). □

## DEC to incorporate systems management

*continued from page 2*

Distributed Management Environment (DME) to EMA. Currently under development, DME will enable central-site personnel to manage network links between distributed systems in addition to monitoring remote systems. DEC is among the vendors that has submitted software to the OSF for possible use within DME.

DEC last week acknowledged that an announcement is planned but declined to offer details.

Analysts said systems management capabilities are needed to round out EMA. "DEC called it EMA because the structure was for management of an entire enterprise," said Howard Niden, senior manager and director of Price Waterhouse's Great Lakes VAX Consulting Practice in Chicago. "And that includes both system and network management components."

**DEC and IBM realize remote system management capabilities are the key distributed computing efforts.**

▲▲▲

Rounding out EMA with system management capabilities keeps DEC in step with IBM, with its SystemView strategy for central-site management of network-attached systems, said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C. Dzubeck said both firms realize that remote system management capabilities are the key to users' efforts to build distributed computing, as well as client and server systems.

"[Distributed computing] can never be truly accomplished without system management tools able to operate in a distributed fashion," Dzubeck said. Users must have personnel at or near each site in the net to perform system management tasks.

DEC and other vendors will need to develop software that will enable centralized personnel to restart failed systems, move application processing chores to different sites when problems arise and electronically distribute software.

"This is not a trivial undertaking," Dzubeck said. "Especially from the standpoint of having many thousands of potential locations." □

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## C. Please Answer ALL Questions, Sign & Date the Form.

### 1 Industry: (check one only)

- 01. ☐ Manufacturers (other than computer/communications)
- 02. ☐ Finance/Banking
- 03. ☐ Insurance
- 04. ☐ Real Estate
- 05. ☐ Healthcare Services
- 06. ☐ Legal
- 07. ☐ Hospitality
- 08. ☐ Retail/Wholesale Trade
- 09. ☐ Transportation
- 10. ☐ Utilities
- 11. ☐ Education
- 12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
- 13. ☐ Government State/Local
- 14. ☐ Government Federal
- 15. ☐ Military
- 16. ☐ Aerospace
- 17. ☐ Consultants (independent)
- 18. ☐ Carriers
- 19. ☐ Interconnectors
- 20. ☐ Manufacturers (Computer/Communications)
- 21. ☐ VAR/VAD/Systems House
- 22. ☐ Distributor, Computer Related
- 23. ☐ Distributor, Communications Related
- 24. ☐ Other .....

### 2 Job function: (check one only)

- 1. ☐ Networking Management (Responsible for both voice & data)
- 2. ☐ MIS Management (VP, Dir., Department Head)
- 3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
- 4. ☐ Data Communications Management (Responsible for data only)
- 5. ☐ Telecommunications Management (Responsible for voice only)
- 6. ☐ Financial Management
- 7. ☐ Engineering Management
- 8. ☐ Consultant (Independent)
- 9. ☐ Other .....

### 3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

- 1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
- 2. ☐ Multi Enterprise (Consultants)
- 3. ☐ Department Wide

### 4 What is the total number of sites for which you have purchase influence?

- 1. ☐ 100+
- 2. ☐ 50 - 99
- 3. ☐ 20 - 49
- 4. ☐ 10 - 19
- 5. ☐ 2 - 9
- 6. ☐ 1

### 5 Your primary responsibility: (check one only)

- 1. ☐ Both Data + Voice
- 2. ☐ Data Networking Only
- 3. ☐ Voice Networking Only
- 4. ☐ None

### 6 Which transmission media do you use in your network: (check all that apply)

- Public:
- 01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
- 02. ☐ Leased Line (not including T-1)
- 03. ☐ T-1
- 04. ☐ Fractional T-1
- 05. ☐ T-3/SONET
- 06. ☐ Broadband
- 07. ☐ ISDN
- Private:
- 08. ☐ Satellite
- 09. ☐ Microwave
- 10. ☐ Fiber Optic

### 7 Is your network: (check all that apply)

- LOCAL AREA NETWORK
- 1. ☐ Local (within building)
- 2. ☐ Local (in a campus environment)
- WIDE AREA NETWORKS
- 3. ☐ International
- 4. ☐ National
- 5. ☐ Regional (several states)
- 6. ☐ Metropolitan

### 8 What is your network architecture? (check all that apply)

- 1. ☐ SNA
- 2. ☐ DECNET
- 3. ☐ OSI
- 4. ☐ GOSIP
- 5. ☐ MAP/TOP
- 6. ☐ TCP/IP
- 7. ☐ DCA (UNISYS)
- 8. ☐ OTHER .....

### 9 What is your LAN Operating System? (check all that apply)

- 01. ☐ 3COM (3+, 3+ open)
- 02. ☐ LOCAL TALK (APPLETALK)
- 03. ☐ BANYAN (VINES)
- 04. ☐ DCA (IRMALAN)
- 05. ☐ IBM (LAN Server)
- 06. ☐ IBM (PC LAN PROGRAM)
- 07. ☐ MICROSOFT (LAN MANAGER)
- 08. ☐ UNGERMAN BASS (NET/1)
- 09. ☐ NOVELL (NETWARE)
- 10. ☐ TOPS
- 11. ☐ PROTEON (PRONET)
- 12. ☐ OTHER .....

### 10 What is your LAN environment? (check all that apply)

- 1. ☐ 4M TOKEN RING
- 2. ☐ 16M TOKEN RING
- 3. ☐ ARCNET
- 4. ☐ ETHERNET
- 5. ☐ STARLAN
- 6. ☐ FDDI
- 7. ☐ LOCALTALK
- 8. ☐ 10BASET
- 9. ☐ OTHER .....

### 11 Which operating systems do you utilize? (check all that apply)

- 1. ☐ IBM DOS (VSE)
- 2. ☐ UNIX
- 3. ☐ OS/2
- 4. ☐ OS/2 Extended Edition
- 5. ☐ MVS
- 6. ☐ VM
- 7. ☐ VMS
- 8. ☐ XENIX
- 9. ☐ PICK
- 0. ☐ OTHER .....

### 12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES		MINIS
	A	B	
01. DEC			
02. IBM			
03. AMDAHL			
04. AT&T			
05. BULL HN IS			
06. NCR			
07. DATA GENERAL			
08. WANG			
09. HEWLETT PACKARD			
10. PRIME			
11. TANDEM			
12. UNISYS			
13. CONTROL DATA			
14. OTHER			

### 13 Please indicate by vendor the number of microcomputers/workstations:

- A. Presently installed in your network.
- B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED		PLAN TO INSTALL NEXT 12 MONTHS
	A	B	
01. PCs based on 80286 chip			
02. PCs based on 80386 chip			
03. PCs based on 80486 chip			
04. 8086/8088			
05. Macintosh			
06. RISC-based workstations			
07. UNIX-based workstations			

### 14 What is your planned PC standard? (check all that apply)

- 1. ☐ EISA
- 2. ☐ MCA
- 3. ☐ NUBS (MACINTOSH)

### 15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

- 1. ☐ Europe
- 2. ☐ Asia
- 3. ☐ South America
- 4. ☐ Australia
- 5. ☐ Middle East

### 16 Check ALL that apply in columns A and B

- A) I am presently involved in the purchase process for the following products/services:
- B) I plan to purchase the following products/services in the next 12 months:

Presently Involved	Plan to Purchase
A	B
LOCAL AREA NETWORKS:	
01. <input type="checkbox"/>	<input type="checkbox"/> Local Area Networks
02. <input type="checkbox"/>	<input type="checkbox"/> LAN Servers
03. <input type="checkbox"/>	<input type="checkbox"/> LAN Services
04. <input type="checkbox"/>	<input type="checkbox"/> Cables, Connectors, Baluns
05. <input type="checkbox"/>	<input type="checkbox"/> Bridges, Routers, Gateways
06. <input type="checkbox"/>	<input type="checkbox"/> UPS
07. <input type="checkbox"/>	<input type="checkbox"/> LAN Storage Devices
COMPUTERS/PERIPHERALS:	
08. <input type="checkbox"/>	<input type="checkbox"/> Micros
09. <input type="checkbox"/>	<input type="checkbox"/> Minis
10. <input type="checkbox"/>	<input type="checkbox"/> Mainframes
11. <input type="checkbox"/>	<input type="checkbox"/> Front End Processors
12. <input type="checkbox"/>	<input type="checkbox"/> Terminals
13. <input type="checkbox"/>	<input type="checkbox"/> Laptops
14. <input type="checkbox"/>	<input type="checkbox"/> Printers
15. <input type="checkbox"/>	<input type="checkbox"/> Work Stations
16. <input type="checkbox"/>	<input type="checkbox"/> Cluster Controllers

Presently Involved	Plan to Purchase
A	B
SOFTWARE:	
17. <input type="checkbox"/>	<input type="checkbox"/> Network Management
18. <input type="checkbox"/>	<input type="checkbox"/> Micro to Mainframe
19. <input type="checkbox"/>	<input type="checkbox"/> Network Security
20. <input type="checkbox"/>	<input type="checkbox"/> Call Accounting
21. <input type="checkbox"/>	<input type="checkbox"/> Distributed DBMS
22. <input type="checkbox"/>	<input type="checkbox"/> Communications Software
23. <input type="checkbox"/>	<input type="checkbox"/> Applications Software
24. <input type="checkbox"/>	<input type="checkbox"/> Network Operating Systems Software
25. <input type="checkbox"/>	<input type="checkbox"/> EDI Software
26. <input type="checkbox"/>	<input type="checkbox"/> E-Mail Software

Presently Involved	Plan to Purchase
A	B
DATA COMMUNICATIONS:	
27. <input type="checkbox"/>	<input type="checkbox"/> Modems (over 9.6kbps)
28. <input type="checkbox"/>	<input type="checkbox"/> Modems (under 9.6kbps)
29. <input type="checkbox"/>	<input type="checkbox"/> T-1 Multiplexers
30. <input type="checkbox"/>	<input type="checkbox"/> T-3 Multiplexers
31. <input type="checkbox"/>	<input type="checkbox"/> Fractional T-1 Multiplexers
32. <input type="checkbox"/>	<input type="checkbox"/> Data Switches
33. <input type="checkbox"/>	<input type="checkbox"/> Matrix Switches
34. <input type="checkbox"/>	<input type="checkbox"/> Packet Switches
35. <input type="checkbox"/>	<input type="checkbox"/> Protocol Converters
36. <input type="checkbox"/>	<input type="checkbox"/> Network Management Systems
37. <input type="checkbox"/>	<input type="checkbox"/> Terminal Emulation Boards
38. <input type="checkbox"/>	<input type="checkbox"/> Facsimile Machines
39. <input type="checkbox"/>	<input type="checkbox"/> Diagnostic Test Equipment
40. <input type="checkbox"/>	<input type="checkbox"/> DSU/CSU
41. <input type="checkbox"/>	<input type="checkbox"/> Data Security
42. <input type="checkbox"/>	<input type="checkbox"/> Data Compression Equipment
43. <input type="checkbox"/>	<input type="checkbox"/> Network Adapter Boards
44. <input type="checkbox"/>	<input type="checkbox"/> Microwave
45. <input type="checkbox"/>	<input type="checkbox"/> Messaging Software
TELECOMMUNICATIONS:	
46. <input type="checkbox"/>	<input type="checkbox"/> PBXs (over 1000 lines)
47. <input type="checkbox"/>	<input type="checkbox"/> PBXs (200 - 1000 lines)
48. <input type="checkbox"/>	<input type="checkbox"/> PBXs (under 200 lines)
49. <input type="checkbox"/>	<input type="checkbox"/> Key Systems
50. <input type="checkbox"/>	<input type="checkbox"/> Automatic Call Distributors
51. <input type="checkbox"/>	<input type="checkbox"/> Voice Messaging Systems
52. <input type="checkbox"/>	<input type="checkbox"/> Video Teleconferencing Systems

Presently Involved	Plan to Purchase
A	B
SERVICES:	
53. <input type="checkbox"/>	<input type="checkbox"/> Switched Voice
54. <input type="checkbox"/>	<input type="checkbox"/> Dedicated Leased Line
55. <input type="checkbox"/>	<input type="checkbox"/> T-1
56. <input type="checkbox"/>	<input type="checkbox"/> T-3
57. <input type="checkbox"/>	<input type="checkbox"/> Digital Data
58. <input type="checkbox"/>	<input type="checkbox"/> Packet Switched
59. <input type="checkbox"/>	<input type="checkbox"/> Centrex
60. <input type="checkbox"/>	<input type="checkbox"/> Central Office Lan
61. <input type="checkbox"/>	<input type="checkbox"/> Satellite
62. <input type="checkbox"/>	<input type="checkbox"/> On-Line Information
63. <input type="checkbox"/>	<input type="checkbox"/> ISDN
64. <input type="checkbox"/>	<input type="checkbox"/> EMail
65. <input type="checkbox"/>	<input type="checkbox"/> VSAT

### 17 Estimated value of networking equipment and services:

- A: Which you helped specify, recommend or approve in the last 12 months?
- B: Which you plan to help specify, recommend or approve in the next 12 months?

- A
- 1. ☐ \$100 million and over
- 2. ☐ \$50 - \$99.9 mill
- 3. ☐ \$25 - \$49.9 mill
- 4. ☐ \$20 - \$24.9 mill
- 5. ☐ \$10 - \$19.9 mill
- 6. ☐ \$5 - \$9.9 mill
- 7. ☐ \$1 - \$4.9 mill
- 8. ☐ \$500,000 - \$999,999
- 9. ☐ Under \$500,000

### 18 Estimated gross annual revenue of your entire company/institution: (check one only)

- 1. ☐ over \$10 billion
- 2. ☐ \$1 to \$9.9 bill.
- 3. ☐ \$500 to \$1 bill.
- 4. ☐ \$100 to \$499.9 mill.
- 5. ☐ \$50 to \$99.9 mill.
- 6. ☐ \$10 to \$49.9 mill.
- 7. ☐ \$5 to 9.9 mill.
- 8. ☐ under \$5 mill.

### 19 Estimated number of employees for your entire corporation:

- 1. ☐ over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4. ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ under 500

### 20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

- 1. ☐ Basic Rate Interface Terminal Adapters
- 2. ☐ Primary Rate Interface Equipment
- 3. ☐ Voice/Data terminals
- 4. ☐ Voice-only terminals
- 5. ☐ Data-only terminals

### 21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A	B
PBX	COS
A <input type="checkbox"/>	<input type="checkbox"/> AT&T
B <input type="checkbox"/>	<input type="checkbox"/> ALCATEL
C <input type="checkbox"/>	<input type="checkbox"/> ERICSSON
D <input type="checkbox"/>	<input type="checkbox"/> FUJITSU
E <input type="checkbox"/>	<input type="checkbox"/> HARRIS
F <input type="checkbox"/>	<input type="checkbox"/> HITACHI
G <input type="checkbox"/>	<input type="checkbox"/> ROLM
H <input type="checkbox"/>	<input type="checkbox"/> INTECOM
I <input type="checkbox"/>	<input type="checkbox"/> MEMOREX TELEX
J <input type="checkbox"/>	<input type="checkbox"/> MITEL
K <input type="checkbox"/>	<input type="checkbox"/> NEC
L <input type="checkbox"/>	<input type="checkbox"/> NORTHERN TELECOM
M <input type="checkbox"/>	<input type="checkbox"/> SAMSUNG
N <input type="checkbox"/>	<input type="checkbox"/> SIEMENS
O <input type="checkbox"/>	<input type="checkbox"/> STROMBERG-CARLSON
P <input type="checkbox"/>	<input type="checkbox"/> TOSHIBA
Q <input type="checkbox"/>	<input type="checkbox"/> OTHER .....

**NETWORK WORLD**

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(continued on next column)

# INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

## Worth Noting

“AT&T management has indicated several times that the company is considering eliminating several less strategic businesses. In our view, PBX and key telephone systems are likely targets for disposition.”

Michel Guite  
Senior vice-president  
Salomon Brothers, Inc.  
New York

## IBM fiscal woes could be harbinger for net vendors

Vendor says weak economy will affect others, too.

By Bob Brown  
Senior Editor

NEW YORK — IBM's recent disclosure to financial analysts that its first-quarter results would be weaker than anticipated has fueled concerns that the economic conditions battering the computer maker may signal tough times for other computer and net equipment companies as well.

In a conference call with analysts, IBM said revenue for the first quarter would be flat at best and earnings would fall 50% due to the effects of a worldwide economic slowdown and the disruption in the Persian Gulf. IBM executives said other computer companies are likely suffering too because of a general slowdown in customer purchasing.

The news forced the price of IBM's stock to tumble almost 10% and sent the rest of the market skidding.

“[Network equipment] companies are saying they are seeing some slowing of business,” said George Kelly, a vice-president at the investment firm of Morgan Stanley & Co., Inc. in New York. “They are having to respond with greater sales efforts,” which include looking for revenue from potential customers they have ignored in the past, he added.

Kelly said it is unlikely that vendors will resort to deep price cuts as a means to clinch sales any time soon, though they might be willing to offer more flexible payment schedules or other perquisites to guarantee an order. He said he has not seen any evidence that vendors are resorting to cuts in research and development.

Observers said the IBM bombshell and the anticipated slowdown in business for other computer makers could be particularly troublesome for NCR Corp. in its attempt to resist AT&T's \$6.12 billion takeover bid. NCR has been trying to convince stockholders that it will outrun the growth of the overall stock market, but that would seem much more difficult in the business environment IBM described, observers said.

Most alarming for network equipment vendors that rely on European sales to offset domestic downturns may have been IBM's revelation that overseas sales were disappointing. Observers said this could be viewed as an indicator that Europe, too, has slid into a recession.

“The rising dollar in combination with the recession in Europe is a very difficult situation for many companies,” (continued on page 12)

## INDUSTRY BRIEFS

### AT&T unit, Timeplex ink comarketing deal.

AT&T's International Communications Services (ICS) division and Timeplex, Inc. last week announced a three-year comarketing agreement. AT&T ICS and Timeplex will conduct joint sales calls to provide multinational network users with a combination of AT&T services and Timeplex network equipment. AT&T services involved will include its Skynet International Service, International Accunet Digital Services and Reserved Digital Services. Timeplex products involved will include the company's Link/2+ System, TX3/SuperHub System, Time/LAN bridges, routers and Fiber Distributed Data Interface concentrators, among others. Previously, AT&T sold Timeplex products under a basic reseller agreement, a Timeplex spokesman said.

### Novell, Madge announce technology pact.

Madge Networks, Ltd. has entered into a technology sharing agreement with Novell, Inc. that gives Madge Networks access to Novell's source code for current and future NetWare Internetwork Packet Exchange (IPX), Sequenced Packet Exchange (SPX) and Network Basic I/O System protocols.

Madge Networks' Smart software automatically downloads network protocols onto Smart Ringnode adapters with 128K bytes of memory, thus freeing personal computer memory for applications processing.

Ed Murray, Madge Networks' vice-president of marketing, said the pact should assure customers that the Smart Ringnode adapter is fully compatible with NetWare.

(continued on page 12)

## NATA's proposed PBX-computer interface

### Central office switch manufacturers:

- AT&T
- Northern Telecom, Inc.

### PBX manufacturers:

- Mitel Corp.
- NEC Corp.
- Northern Telecom
- Nynex Corp.
- Rolm Co.

### Computer vendors:

- Digital Equipment Corp.
- Hewlett-Packard Co.
- IBM

PBX-computer link sponsored by NATA:

- Physical interface
- Data transfer protocols
- Messaging structures

**Mission:** To provide standards-making bodies with baseline interfaces for linking telephone systems and computers that software developers can use to build computer-telephone applications.

**Participants:** AT&T, Bellcore, DEC and IBM, among others

**First meeting:** April 18 and 19 in Arlington, Va.

SOURCE: NORTH AMERICAN TELECOMMUNICATIONS ASSOCIATION, WASHINGTON, D.C.  
GRAPHIC BY SUSAN J. CHAMPENY

## NATA group to form PBX-to-host specs

Task force will try to agree on baseline standards for linking different computers, telephone systems.

By Bob Brown  
Senior Editor

ARLINGTON, Va. — A newly formed task force will hold its first meeting here April 18 and 19 in hopes of reaching a consensus on some baseline interfaces to be used to link various vendors' computers and telephone systems.

By specifying the physical interfaces, data-transfer protocols and message structures needed to link computers and telephone systems, the North American Telecommunications Association's (NATA) Computer-Telephone Interface Task Force hopes to create a “standard” that software developers can use to build applications while waiting for official standards to emerge.

### A diverse group

The task force will largely represent private branch exchange and telephone equipment makers. But it will also bring together computer manufacturers, software developers, systems integrators, common carriers and representatives from Bell Communications Research. Task group members include IBM, Digital Equipment Corp., AT&T and Fujitsu Business Communication Systems, among others.

There are a lack of applications designed to take advantage of computer-to-telephone system links because software developers currently building computer-to-telephone applications must custom design the programs for each environment.

A typical computer-to-telephone application would, for example, enable caller identifica-

tion data delivered with an incoming call to initiate a computer search for the caller's record, improving customer support by speeding call handling and personalizing service.

Once the task force devises the baseline specifications required, it will present them to the standards bodies for inclusion in official standards. The task force will not become a standards organization itself, said Mary Bradshaw, NATA's industry relations director and task force coordinator.

There are currently two

The task force will not become a standards organization itself, Mary Bradshaw said.

▲▲▲

groups developing official standards in this area: the European Computer Manufacturers Association (ECMA) under its Computer-Supported Telecommunications Application Project; and, in North America, ANSI is developing standards under its Switch Computer Applications Interface Project.

“We don't need another standards body,” said Tony Bawcutt, assistant vice-president of corporate marketing at Mitel Corp., a Kanata, Ontario, PBX maker participating in the task force. Mitel recently urged ECMA to initiate (continued on page 12)



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\*Network Protection Capability option not available in all locations.

## IBM fiscal woes could be harbinger

*continued from page 9*

tion with the weakening European economy clearly signals tougher times ahead for those networking companies that have a heavy dependency on overseas sales," said Andy Schopick, an independent analyst affiliated with Nutmeg Securities, Inc. in Southport, Conn. "It will be a difficult environment in which to grow."

Such companies as Network Equipment Technologies, Inc. and Newbridge Networks Corp., among others, are particularly vulnerable to a European downturn in sales, he said.

That's because those vendors compete

in a highly mature domestic multiplexer market and have turned to Europe and other overseas markets as new sources of revenue.

Less susceptible to the economic downturn will be network vendors in less mature, fast growing markets such as the intelligent hub market, Schopick said.

Michel Guite, a senior vice-president at Salomon Brothers, Inc., a New York-based investment firm, agreed that hub and local-area network vendors and their customers probably have little to worry about in the short run.

But Guite cautioned that a slowdown in personal computer sales "will eventually migrate to a slowdown in PCs being connected to LANs." □

## NATA group to form PBX-to-host spec

*continued from page 9*

cooperative efforts with the ANSI group. "But the NATA group would do well to help break log jams within the existing standards bodies."

Jim Burton, president of Computer-Telephone Link, Inc., a Boston consultancy, and moderator for the upcoming task group meeting, said the ECMA standards might not be available until this summer. Implementation of the ANSI standards might be two years away, he said.

### Going their own way

The lack of standards has led many de-

velopers to build applications atop the computer-to-telephony platforms from the largest vendors, such as CallPath from IBM and Computer Integrated Telephony from DEC. These software developers are holding off building applications for other vendors' platforms for lack of development funds, he said.

"You've got a half-dozen switch manufacturers and three or four computer makers that have all developed their own interfaces," Burton said. "The economies aren't there for a software developer to build products for each vendor's interface."

John Parker, manager of technical sales and support for Fujitsu Business Communication, acknowledged that his company's Telecommunications Computer Services Interface has proprietary features because standards are not available.

"The more we do to eliminate the word 'proprietary' from our language, the better," he said about the task force.

Bradshaw noted that the task force is not intended to be a long-lasting organization. "We want to go in and do our business and leave," she said. □

# Your old computers can make a difference. Donate them!

The East-West Education Development Foundation, a not-for-profit foundation, is seeking donations of surplus personal computers and peripherals for placement in educational institutions in the USSR and Eastern Europe. The goal of the Foundation is to introduce information technology into the educational system of those countries evolving toward a democratic, free market society. By educating the students on the power of information technology, they will be better equipped to compete in the global market of tomorrow.

### Information Technology Vendors:

Excess inventory donated to the East-West Education Development Foundation may earn an additional tax deduction\*, as well as build market share for your brand in emerging markets.

### Corporations:

As systems are upgraded to new technology platforms, East-West Education Development Foundation will place your old equipment where it will be used and valued. Your corporation may earn an additional tax deduction.\*

### Of special note:

The East-West Education Development Foundation will match computer donations to schools in the USSR and Eastern Europe with donations in the United States.

For further information, please contact:



One Exeter Plaza, 15th Floor  
Boston, MA 02116  
Tel: (617) 542-1234  
Fax: (617) 542-3333

\*Under IRS Section 170(e)(3), corporations which donate their inventory (property sold in the normal course of business) to certain charitable educational organizations, receive an additional tax benefit. The deduction will be the total of (a) the donor's tax basis in the donated inventory, plus (b) one-half of the difference between the inventory's tax basis and its fair market value, (c) any incidental costs associated with donating the inventory, such as shipping, postage or warehousing.

## Industry Briefs

*continued from page 9*

### CC:Mail to resell application.

Electronic mail supplier cc:Mail, Inc. recently entered into an agreement to resell PowerCore, Inc.'s Network Scheduler II group scheduling and calendaring application.

A new version of cc:Mail bundled with Network Scheduler II is slated to ship within six to nine months, the company said. Customers that purchase cc:Mail and Network Scheduler II before then may upgrade to the integrated version for free.

**Microsoft joins OMG.** Microsoft Corp. recently joined the Object Management Group (OMG), an organization of more than 100 vendors and software developers that have banded together to create a common technical framework for development of object-oriented applications that run across networks.

**X/Open champions compatibility.** X/Open Company, Ltd., the Menlo Park, Calif.-based open systems organization dedicated to developing guidelines for a common application development environment, recently published a new specification that calls for vendors to implement a uniform version of the Server Message Block (SMB) protocol.

Called the Protocols for X/Open PC Internetworking SMB, the new specification allows MS-DOS and OS/2 client personal computers to communicate directly with X/Open-compliant servers.

### Start-up reaches for market.

As expected, Anand Jagannathan, one of the founders of Banyan Systems, Inc., has formed Reach Software Corp., a Sunnyvale, Calif., company that plans to launch a new class of electronic mail-enabled workflow applications designed for local-area networks.

The offerings will address the need to organize, route and integrate data and applications across a work group, as well as across a corporate enterprisewide network.

Jagannathan said the company will release its first product later this spring. □

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# TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

## Worth Noting

“Charging monthly fees for network services is like charging people to get into a supermarket. The object is to get people to buy groceries, but admission would keep many away. The fees are going the way of the dinosaur.”

Robert Self  
President  
Market Dynamics, Inc.  
New York

## Carrier Watch

SmithKline Beecham Corp. last week announced that it has awarded **US Sprint Communications Co.** a three-year contract valued at more than \$40 million for global communications services.

Under the agreement, US Sprint will build SmithKline an international Virtual Private Network (VPN) linking its London offices with sites throughout the U.S. Users at these sites will be able to call on-network locations using a uniform seven-digit dialing plan. SmithKline will also use the carrier's 800 and private-line services.

The SmithKline international net will be developed by US Sprint, which will work in conjunction with **Cable & Wireless PLC** and **Mercury Communications, Ltd.**, its U.K. subsidiary.

**Advanced Telecommunications Corp. (ATC)**, recently received approval from the North Carolina Public Service Commission to provide intrastate long-distance services to business and residential customers in that state.

ATC will now operate in 10 contiguous Sun Belt states. The regional carrier plans to offer 1+, outbound WATS, calling card, international and inbound 800 services in North Carolina. ☐

## AT&T announces calling plan for small customers

Carrier offers its alternative to MCI's Preferred.

By Bob Wallace  
Senior Editor

BASKING RIDGE, N.J. — AT&T last week introduced a custom network service that offers flat-rate pricing, volume discounts and new dialing features for businesses that spend \$50 to \$2,000 a month on long-distance services.

AT&T CustomNet offers low-end, multilocation customers a combination of services, consolidated billing, management reports and discounts previously unavailable to small users.

Services attainable under AT&T CustomNet include direct-dialed domestic, AT&T Corporate Card, direct-dialed international and Alliance teleconferencing services. Small users can combine the outbound long-distance services they use at as many as 50 locations and receive both a single bill and a volume discount across all services.

AT&T CustomNet was announced just one month after MCI Communications Corp. rolled out MCI Preferred service, a custom network offering for users that spend \$50 to \$1,500 a month on net services. Services available under MCI Preferred include switched voice, 800, international and a new calling card offering (“MCI offers new pricing, options for small users,”

NW, Feb. 25).

AT&T CustomNet provides a monthly discount of 10% on the domestic area code with the highest billed usage charges and a 10% discount on the plan's total usage over \$200 a month. MCI Preferred offers the same discount structure.

AT&T CustomNet customers can add as many as five residential locations to be included in the plan's total usage volume discount. Although AT&T declined to divulge pricing for CustomNet, the carrier said it will employ flat usage rates based on the time of day the call is made, not on the distance of the call.

The carrier charges a \$10-per-location fee for AT&T CustomNet and will waive the \$8 recurring monthly fee if total monthly usage exceeds \$50 a month. AT&T will also offer management reports to help users analyze their traffic patterns.

AT&T CustomNet consolidates all charges into one bill. Users will be able to use account codes to make it easier to bill back departments or customers.

AT&T CustomNet can be ordered now for installation this summer, pending Federal Communications Commission approval. ☐

## WASHINGTON UPDATE

BY ANITA TAFF

### Figures show AT&T recouped in fourth quarter.

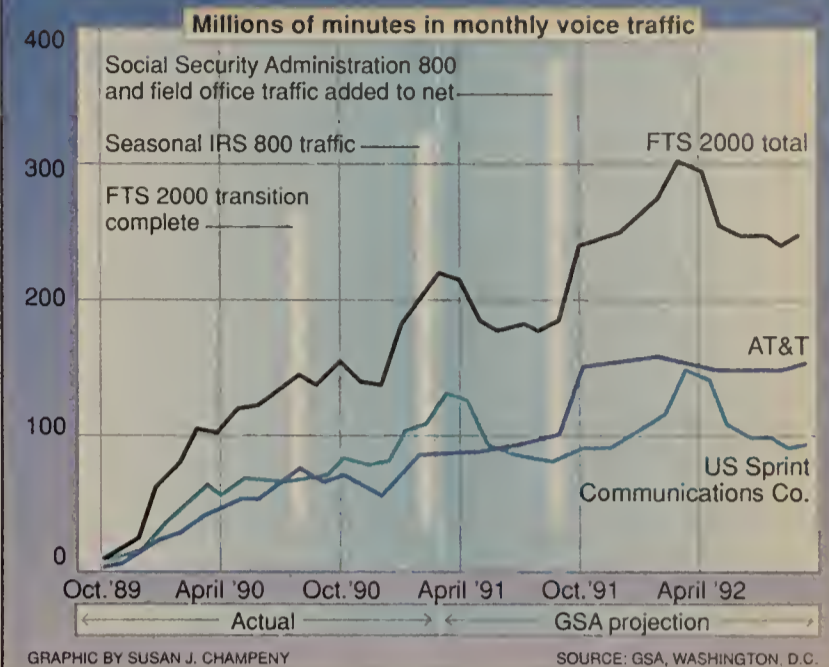
AT&T's market share showed a slight gain during the fourth quarter last year, rising from 62.9% of all interstate minutes of traffic in the third quarter to 63.3% in the fourth. The report, prepared by the Federal Communications Commission's Industry Analysis Division, shows that until the third quarter of 1990, AT&T's market share of switched voice was declining steadily.

The FCC had reported in the second quarter of 1990 that AT&T's market share increased. Those numbers were later revised, and AT&T's market share was shown to decline slightly.

**FCC won't get involved.** The Federal Communications Commission has denied a request by NCR Corp. to investigate AT&T's proposed \$6.1 billion takeover of the computer firm. The commission ruled that it does not have the authority to approve such an acquisition but will only become involved if the deal involves transfer of FCC licenses granted to NCR or if it should pose a threat to AT&T's ability to provide regulated telephone services.

**AT&T files 17th Tariff 15 deal.** AT&T filed its 17th Tariff 15 deal, in which it plans to offer its Megacom service to Voicecom Systems, Inc. at a flat rate of 8.5 cents per minute. Voicecom must commit to a five-year term for a minimum usage of 225 million minutes annually. ☐

## FTS 2000 switched voice traffic



## GSA tries to justify handling of FTS 2000

Carriers criticize management of huge government network, but officials publicly defend their actions.

By Anita Taff  
Washington Bureau Chief

WASHINGTON, D.C. — GSA officials handling Federal Telecommunications System (FTS) 2000, which has come under criticism recently, appeared before the Board of Contract Appeals and Congress late last month to defend their handling of the huge network contract.

Concerns have been raised by AT&T, rival carriers, industry analysts and some members of Congress as to whether the General Services Administration has handled FTS 2000 properly. They are questioning whether the contract is benefiting federal users as much as it should.

In two forums last month, GSA staffers overseeing the FTS 2000 contract made public explanations to agency officials and lawmakers about the manner in which they are administering the multibillion-dollar contract.

At a hearing before the GSA Board of Contract Appeals, FTS 2000 officials had to defend the practices they use in assigning federal users to network facilities. AT&T had filed a protest against its rival FTS 2000 carrier, US Sprint Communications Co., alleging that the GSA improperly assigned users to US Sprint's net.

The board threw out AT&T's protest, but the carrier's challenge could have resulted in the restriction of the GSA's ability to make future decisions about user assignments.

GSA officials were also called to testify before Congress late last month to justify their man-

agement of the FTS 2000 contract. That hearing, prompted in part by AT&T's protest, examined several aspects of the agency's conduct, including the criteria it uses to assign government agencies to the two carrier networks, the GSA's billing and pricing policies, and the GSA's understanding and willingness to carry out Congress' intentions for the future of FTS 2000.

It is not clear whether the GSA's efforts to publicly justify the handling of the contract have been enough to quell the concerns surrounding FTS 2000. The GSA Board of Contract Appeals threw out AT&T's protest, saying it did not have jurisdiction over the matter but that AT&T can use other procedural means to file another challenge to the contract. Or AT&T could take the matter to court.

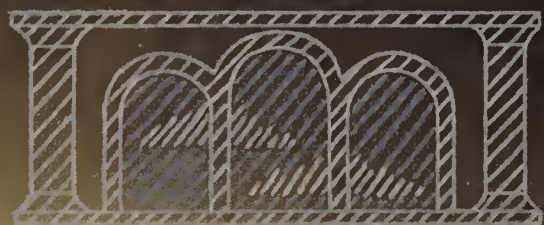
AT&T officials say they are reviewing their options but have not made a decision.

It is also unclear whether Congress intends to step in and change the way the GSA is handling the contract.

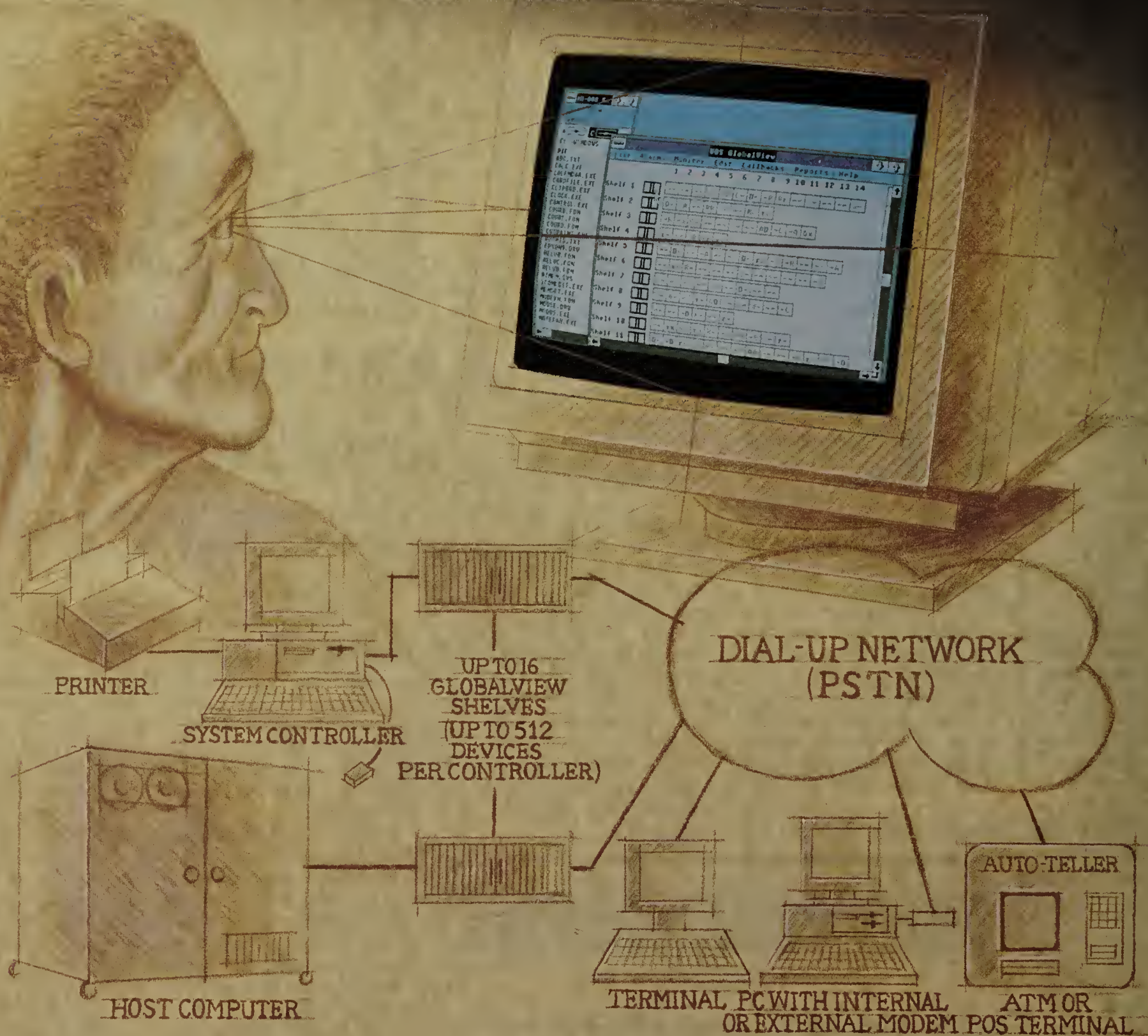
The FTS 2000 network has replaced the federal government's aging analog telephone facilities with digital voice services. The contract also calls for implementation of a range of new services, including videoconferencing, packet switching and dedicated data services. Virtually every federal agency is mandated to use the network, and the total value of the FTS 2000 contract could be as high as \$25 billion over 10

(continued on page 46)

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# DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

## Worth Noting

**V**isa International, Inc. recently said it will install a total of 13 Compression Labs, Inc. videoconferencing systems in eight locations worldwide. The units will be linked via Visa's international private T-1 network and will be used to support management briefings, executive meetings and training classes.

## Data Packets

**General DataComm, Inc.** recently announced a new very low bit rate voice (VLBRV) card that supports voice channels of 2,400, 4.8K and 9.6K bit/sec on its Megamux Transport Management System family of T-1 multiplexers.

The software-controlled card can respond to network conditions dynamically. For example, users can configure the card to support 9.6K bit/sec voice channels, then drop that speed to 4.8K or 2,400 bit/sec if bandwidth is needed periodically for other applications, such as during a circuit outage.

Additionally, the VLBRV card supports an optional Fax Bypass feature. This capability enables it to transmit Group III facsimile traffic at 9.6K bit/sec.

Typically, a 64K bit/sec channel is required to digitize a 9.6K bit/sec analog fax signal. But when the VLBRV card detects a fax signal on a channel, it bypasses the voice compression algorithm and makes 9.6K bit/sec of digital bandwidth available for the fax transmission.

The VLBRV card is expected to be available in July. It costs \$1,600. The Fax Bypass option costs an additional \$500. ■

## VSAT net helps Pay'N Pak retail stores save'n serve

Network will cut costs while improving operations.

By Bob Brown  
Senior Editor

KENT, Wash. — Starting from scratch, Pay'N Pak Stores, Inc. has begun migrating the bulk of its retail stores onto a very small aperture terminal network in order to improve customer service and reduce expenses.

The \$500 million home improvement products retailer, which until December had no data network, expects the VSAT setup will cut the cost of manually moving data between stores and obtaining credit card transaction approval.

Pay'N Pak is also counting on the net to improve customer service by speeding up credit authorizations via on-line links rather than relying on a time-consuming dial-up process, according to Duane Dunn, director of Pay'N

Pak's information center here.

This past December, the company cut over its first 15 stores onto the VSAT network. Up until that time, Pay'N Pak handled sales and other business data mainly via faxes or by mailing diskettes between locations.

But thanks largely to a change in upper management and an accompanying change in philosophy, Pay'N Pak began weighing its network options about a year ago as part of a broad corporate automation project.

"Networking wasn't something that was emphasized by the previous management," Dunn said. "At least starting from nothing, we've been able to pick whatever we want for the network."

Pay'N Pak opted for the VSAT network over a terrestrial net (continued on page 17)

## X.25 packet switch offers advanced data recovery

By Paul Desmond  
Senior Editor

IRVINE, Calif. — Telefile, Inc. recently introduced an X.25 packet switch with integral local-area network routers and packet assembler/disassemblers that provides advanced data recovery by using an OSI transport mechanism.

Telefile claims that its new Tele-Switch Plus network processor offers the industry's first implementation of the Open Systems Interconnection Layer 4, Transport Class 3 protocol.

John Ferguson, director of marketing at Telefile, based here, said the OSI Transport Class 3 protocol is more efficient than typical X.25 datagram transports because it requires less overhead in an X.25 packet, which translates to faster network transit time.

In addition, Transport Class 3 helps ensure data and circuit recovery in the event of a line failure. Should a line fail, the Tele-Switch Plus can maintain a virtual connection with the remote switch to keep the session supported by that line intact until an alternate session can be established, Ferguson said.

That function is related to the automatic routing mechanism in Tele-Switch Plus, which always knows the four best routes across the network at any point in time.

Tele-Switch Plus comes with integral routers that support Ethernet or Arcnet networks. The routers can also support the Internet Protocol or Novell, Inc.'s Internetwork Packet Exchange (IPX) protocols.

Token-ring LAN support is under development, and according to Ferguson, the company is open to any other protocols customers require.

An integral PAD function is also included, which supports the Burroughs Poll Select protocol. Asynchronous, Synchronous Data Link Control and Binary Synchronous Communications support are under development and will ship in about six months, Ferguson said.

Tele-Switch Plus is available in 10-, 20- and 36-port models. The 36-port model can be daisy-chained to create nodes that support as many as 544 ports.

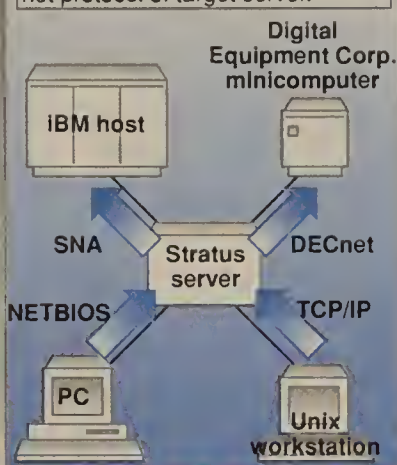
Each port supports either trunk or tail circuits. Trunk speeds up to 2.048M bit/sec can be supported.

The switch is based on Motorola, Inc. microprocessors, ranging from the Motorola 68000, which supports switching speeds of 1,000 packet/sec for 128-byte packets, to the 68040, which handles 7.5K packet/sec.

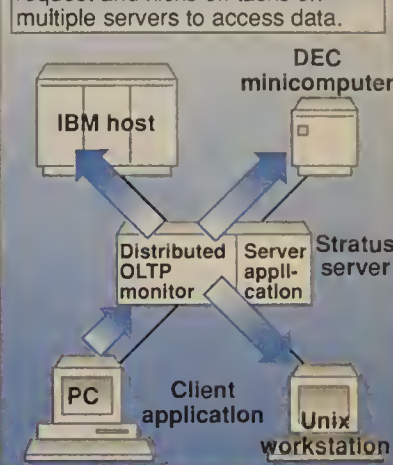
Tele-Switch Plus is available now. Pricing for the product starts at \$10,400. ■

## Stratus' transaction-switching strategy

**Network transaction processing:** Converts client request to support net protocol of target server.



**Distributed OLTP:** OLTP monitor receives client request and kicks off tasks on multiple servers to access data.



OLTP = On-line transaction processing

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: STRATUS COMPUTER, INC., MARLBOROUGH, MASS.

## Stratus to position minis as gateways

New strategy key to company's plan to offer customers distributed OLTP monitoring software.

By Jim Brown  
Senior Editor

MARLBOROUGH, Mass. — Stratus Computer, Inc. recently announced plans to position its fault-tolerant line of minicomputers as communications gateways in on-line transaction processing (OLTP) networks.

The company's two-pronged strategy is aimed at positioning its processors to route transactions between vendors' client applications and host-based data base management systems.

Long-range, the company plans to offer users distributed OLTP monitoring software. This will enable customers to build client/server applications in which a Stratus processor accepts a user request for data and automatically generates the transactions needed to extract the information from multiple DBMSs on different brands of servers.

The Stratus processor then assembles the data and feeds it to the client (see graphic, this page). The package is expected to be available next year.

In the interim, Stratus is reselling Scientific Software, Inc.'s Network Express software. This will enable users to position Stratus processors as protocol converters, providing access to various mainframe data bases for terminals or local-area network-attached devices.

"Users want many different kinds of devices networked together to perform operations that were formerly done on mainframes or minicomputers," said William Foster, Stratus' president and chief executive officer. "Stratus will have a role to play by pro-

viding a continuously available server."

Central to Stratus' plans is its promise to provide a distributed OLTP monitor to support applications that enable a client to issue a single request for data, which may be on several hosts.

For example, users can build an order entry application that enables a clerk to enter a customer number and the quantity of a product order into a workstation running the client portion of the application. That request would be forwarded to the Stratus pro-

**C**entral to Stratus' plans is its promise to provide a distributed OLTP monitor.

▲▲▲

cessor, where the distributed OLTP monitor kicks off a series of transactions needed to pool information from one or more hosts.

This enables the Stratus processor to collect the customer's name and address from a data base on one vendor's host, the customer's credit history from another and query an inventory data base on a third to see if the desired quantity of a product is in stock. The distributed OLTP software will then pass this information back to the client.

Stratus said it will use software (continued on page 17)

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# 22 reasons why **Network World** is the best networking publication in America

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According to The Adams Company Internetworking Pilot, **Network World** readers are more involved in purchasing enterprise networking products and services in the 22 critical areas listed than readers of Communications Week, Data Communications and Networking Management.

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## **Network World** Readers . . . involved in the purchase

1. Establish networking/communications requirements for company or department.
2. Authorize or approve the purchase of networking or communications hardware, software or systems.
3. Integrate CPUs from multiple vendors into networked systems.
4. Personal involvement in the purchase of voice communications equipment, services or software.
5. Personal involvement in the purchase of local-area networks (including LAN operating systems).
6. Personal involvement in the purchase of bridges, routers gateways/wide-area networks.
7. Personal involvement in the purchase of private networks.

## **Network World** Readers . . . use and plan to purchase

8. Single-department LANs currently in use at location.
9. Multi-department LANs currently in use at location.
10. Modems under 9600 BPS planned for purchase over the next 12 months.
11. Protocol converters planned for purchase over the next 12 months.
12. Wide-area networks currently in use at location.
13. Wide-area networks planned for purchase over the next 12 months (tied for first).
14. Bridges, routers or gateways planned for purchase over the next 12 months.
15. T-1 or T-3 networks currently in use at location.
16. Micro-mainframe emulation boards currently in use at location.

## **Network World** Readers . . . largest companies, biggest budgets, power to spend

17. Personally involved in spending over \$100K on voice communications systems in the past 12 months.
18. Can authorize expenditures in excess of \$25K for computer, networking or communications equipment or software.
19. 10 or more internetworked sites in organization.
20. 1,000 or more employees in organization.
21. More than \$1 billion in total company sales.
22. Management responsibility/networking or communications job function.

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## **NETWORK WORLD**

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## Stratus to position minis as gateways

*continued from page 15*

now under development by Transarc Corp. to build its distributed OLTP monitor, which will also support the Open Software Foundation's Distributed Computing Environment. While distributed OLTP monitoring software is not yet available, users in Fortune 500 companies are already beginning to examine the architectures that Stratus and other vendors such as IBM, Hewlett-Packard Co., NCR Corp. and Unisys Corp. have announced.

"Users are looking to make distributed OLTP topology and software tool decisions this year," said Peter Kastner, vice-president at the Aberdeen Group, a consulting and market research firm in Boston. However, they will not start building distributed OLTP applications until 1993 or 1994, he added.

Stratus' plans fit in well with those of other vendors and match emerging end-

user needs, said Richard Schreiber, president of The Standish Group International, Inc., an OLTP consulting firm in Hyannis, Mass. "But you're still talking futures. Distributed transaction processing won't really take off until 1994. You'll be looking at piloting going on for the next few years."

Until then, users such as Blue Cross and Blue Shield of Massachusetts are using Network Express to build applications that link disparate systems.

Network Express enables users to build applications running on a Stratus processor that receive data from a client supporting one network protocol and route it to a DBMS on a host supporting a different network protocol.

The health insurance company is using

Network Express so that hospitals and other health care providers can use their own microcomputers or terminals to access IBM or Honeywell, Inc. mainframes in order to validate a policy or file a claim, said George Mey, director of provider automation for Blue Cross and Blue Shield. This will obviate the need for health care providers to use a dedicated terminal, which Blue Cross and Blue Shield currently provide for accessing host data.

Analysts agreed that Stratus' two-pronged strategy will help better position its systems in transaction processing nets. "Stratus is best suited as a network front end or gateway machine," Kastner said.

The firm can bring value to transaction processing nets by providing fault-tolerant

systems that have redundant CPUs and other components that can take over chores when primary CPUs or components fail. "Stratus is positioning its systems as fault-tolerant servers or central nodes in enterprise nets," said David Evancha, director of research at WorkGroup Technologies, a Hampton, N.H., consultancy.

Stratus' efforts to provide interoperability among various vendors' systems fits well with user strategies to build multivendor OLTP networks, Evancha said. "As companies move more toward enterprise-wide networking, they are going to need some type of central server to handle the wide range of systems they are interconnecting. And that central server will need to be fault-tolerant." □

## VSAT net helps stores save'n serve

*continued from page 15*

because it enabled the company to lock in a fixed price for the network and to have central management control, he added.

By the end of this month, Pay'N Pak's VSAT network will link its data center here to at least 60 of the company's 102 stores, which are located in 14 Western and Midwestern states.

The network is anchored by a used earth station acquired from GTE Spacenet Corp. along with the rest of the VSAT net for an undisclosed price.

For now, point-of-sale data applications such as price lookup and on-line credit card verifications are beamed to the earth station at 9.6K bit/sec, although the network supports speeds up to 56K bit/sec, Dunn said.

Even at 9.6K bit/sec, however, the credit card verification process will be cut from as long as a minute to about eight seconds, he said. For credit card authorizations, the VSAT net is linked via a 9.6K bit/sec leased line to SeaFirst Corp., a large regional bank.

The VSAT network also supports broadcast video applications, Dunn said. Video is being used to broadcast speeches from top executives to employees at remote sites and for training purposes, he said.

Later this year, Apple Computer, Inc. Macintosh microcomputers at Pay'N Pak's retail sites will be tied into the VSAT net to support a computer-aided design application that the retailer has deemed strategic to set it apart from competitors.

Currently, customers using Pay'N Pak's customized Macintosh software can graphically construct three-dimensional kitchen cabinet and bathroom layouts on the in-store stand-alone computers. The computers list the quantity and prices of components used in the graphic construction on the screen when the customer chooses a particular cabinet brand from multiple menus on the Macintosh.

Once networked, the Macintoshes will be linked to inventory and pricing information on an IBM Application System/400 here to give customers in stores the most up-to-date merchandise information.

The net is backed up by a GTE Spacenet hub site in Chicago. □

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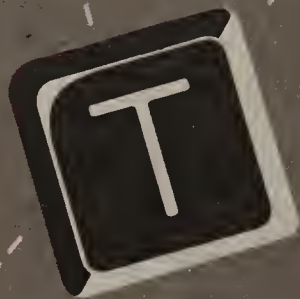
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## Worth Noting

“In most cases, the security provided in [Novell, Inc.’s] NetWare and [Microsoft Corp.’s] LAN Manager is sufficient. You can implement tremendously secure systems with these operating systems. It just makes me angry that most people don’t use them.”

**Cheryl Currid**  
Founder  
Cheryl Currid and Co.  
Houston

## Netnotes

**Digital Communications Associates, Inc. (DCA)** has announced that from now on it will bundle Helix Software Co.’s Netroom software — a memory relief package — with its 10BaseT family of local-area network adapters.

According to Alpharetta, Ga.-based DCA, the addition of Netroom will enable users to move part or all of their workstation LAN software out of conventional memory and into expanded memory, freeing space for applications.

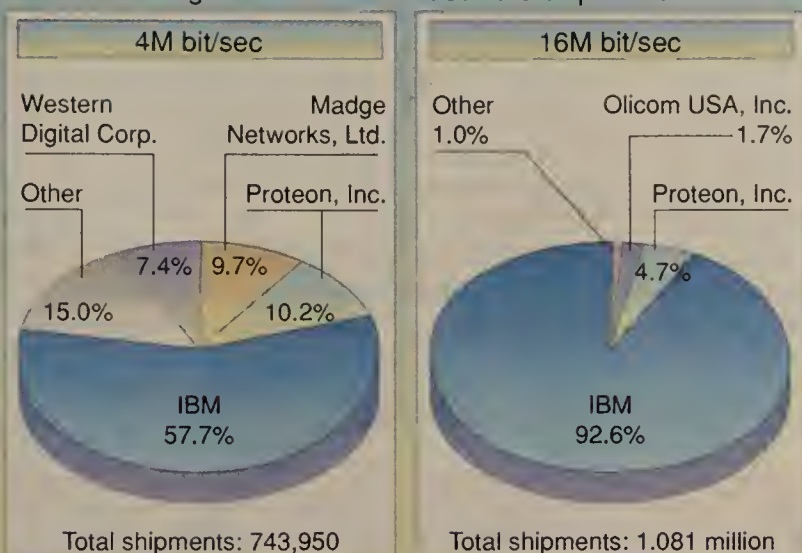
DCA also enhanced its DCA 10Base Twisted Pair, 10Base Coax and 10Base Fiber Optic network adapters by including drivers for non-DCA LAN operating systems such as Microsoft Corp.’s LAN Manager 2.0, Banyan Systems, Inc.’s VINES 4.0, and Novell, Inc.’s NetWare 2.X and 3.X series.

The adapters also include DCA’s new 10BEUI, which is a Network Basic I/O System Extended User Interface-compatible with the 3Com Corp./Microsoft Network Driver Interface Specification for LAN adapters.

Pricing for the 10Base Twisted Pair, 10Base Coax and 10Base Fiber Optic adapters starts at \$279, \$199 and \$795, respectively. All adapters are available now. ■

## IBM maintains token-ring dominance

1990 token-ring PC network interface card shipments worldwide



## 3Com intros high-power adapter for unshielded nets

16-bit card tops 3Com EtherLink 16 product line.

**By Caryn Gillooly**  
Senior Editor

SANTA CLARA, Calif. — 3Com Corp. recently introduced its EtherLink 16 TP, a 16-bit Ethernet adapter for 10BaseT twisted-pair networks.

According to Dave DePuy, director of marketing for 3Com’s network adapter division, the EtherLink 16 family outperforms 16-bit adapters from competitors. He added that the EtherLink 16 TP also outperforms and is more flexible than the rest of 3Com’s EtherLink 16 family.

DePuy based his performance

about 1,025K byte/sec; the closest competitor, Western Digital, came in at about 970K byte/sec.

The throughput difference was even greater in other LAN environments, with the 3Com card in a 3+ Open Version 1.1 environment providing almost 300K byte/sec more than its closest competitor.

“Overall, we found EtherLink 16 to have excellent performance,” the study concluded.

As a result of several enhancements, the new twisted-pair version of the adapter outperforms 3Com’s existing 16-bit adapters, DePuy said. The individual enhancements are not new — competitors have offered similar components before — but 3Com has combined several advances that have resulted in increased throughput.

First, according to DePuy, is the card’s 16-bit shared memory bus. Most interface cards, including the existing EtherLink 16 boards, use either programmed I/O or shared-memory buses. With programmed I/O, the interface’s memory is shared among I/O devices; with shared memory, it is shared only between the adapter and the host.

Because memory handshakes between I/O devices are much slower than those between the adapter and the host, more transactions can occur in a specified period of time, thus throughput is increased.

DePuy also said the EtherLink 16 TP uses an Intel Corp. 82586 chip for data-link control, which has a faster clock speed than National Semiconductor Corp.’s

3Com has combined several advances that have resulted in increased throughput.

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claims on a study conducted by LanQuest Labs of San Jose, Calif., in which 3Com’s network interface cards had higher throughput rates than cards from Gateway Communications, Inc., Novell, Inc., Tiara Communications Systems, Inc. and Western Digital Corp.

LanQuest tested five high-performance, 16-bit Ethernet adapters — one from each company — with three local-area network operating systems. In a Novell NetWare 286 Version 2.15 environment, the study found that 3Com’s card had a throughput of

## Users wary of moving applications to LANs

Some managers express concerns about benefits, risks involved in downsizing from larger systems.

**By Timothy O’Brien**  
West Coast Bureau Chief

Despite advances in LAN technology, downsizing has not taken root at many companies because of some lingering, deep-seated concerns held by corporate and information systems (IS) executives.

Users and analysts say many managers are leery about moving mission-critical business applications to local-area networks from larger systems because they are worried about maintaining control and security in the LAN environment. They are also concerned with the lack of adequate LAN management tools.

In addition, some users say basic assumptions about downsizing benefits remain unproven and many are wrestling with a thorny political issue. The proliferation of desktop devices and the advent of LANs have posed a threat to existing organizational structures, as well as operations that MIS groups have spent decades automating.

Downsizing can force companies to reexamine the way they do business, which makes the change difficult and more far-reaching.

“For downsizing, management must make a clean break from applications cast in concrete. That means living on the edge,” contends Aaron Zornes, vice-president of the META Group, a consulting firm in Westport, Conn.

“Management is not willing to take that big a risk,” said Brice Bonwill.

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“LANs are not ready for prime time yet. Management is not willing to take that big a risk,” added Brice Bonwill, president of Systems and Network Solutions, a mainframe/LAN application consulting firm in Washington, D.C.

Jack Watts, a senior analyst who has been involved in developing a trial LAN-based financial application for Westinghouse Defense & Electronics Systems Co. (continued on page 20)

## Chipcom offers token-ring module for its LAN hub

**By Eric Smalley**  
Senior Editor

SOUTHBOROUGH, Mass. — Chipcom Corp. has jumped into the token-ring market with the introduction of a token-ring module for its local-area network wiring hub.

Chipcom’s Token Ring Multistation Access Unit Module is an eight-port interface for the company’s ONLINE System Concentrator. As many as 16 of the modules can be configured in each concentrator, allowing as many as 128 token-ring workstations per concentrator.

A single ONLINE System Concentrator can be configured with both token-ring and Ethernet modules. The current ONLINE Ethernet management module can also be used to configure and collect statistics for the token-ring module but cannot monitor or collect performance statistics

for it, according to Frank Fuller, senior product manager at Chipcom.

The Token Ring Multistation Access Unit Module supports shielded and unshielded twisted-pair wiring at distances as long as 275 meters for shielded cable and 100 meters for unshielded cable.

The module includes automatic ring wrap, which allows the network to function if a link to an end node fails, and ring-in/ring-out ports for connecting the concentrator to other token-ring nets. The module can also be added or removed from a concentrator without requiring that the concentrator be shut off, according to Chipcom officials.

The Token Ring Multistation Access Unit Module is expected to be available in May at a cost of \$1,195.

For more information, contact Chipcom at (508) 460-8900. ■

## 3Com intros adapter for unshielded nets

*continued from page 19*

8390 chip used in competitors' adapters and in the rest of 3Com's EtherLink family.

"We are targeting users with 386 or 486 machines — high-performance cards for high-performance machines," DePuy said.

He also said the EtherLink 16 TP cards are more flexible than those of its competitors. Although they were designed for standard 10BaseT networks, they can communicate with prestandard hubs, such as SynOptics Communications, Inc.'s LattisNet and others from AT&T, David Systems, Inc. and Hewlett-Packard Co.

"10BaseT was only approved in September 1990," DePuy said. "SynOptics has been shipping its [LattisNet unshielded twisted-pair] hub since 1987. [They] have shipped about half a million prestandard ports."

According to DePuy, the cards come with optional jumpers, or switches that control voltage, which can be configured to accept signals from each of its prestandard products. This will enable users to employ 3Com adapters with existing hubs.

Users seemed enthusiastic about the new offering. "It looks like this is the only card we'll put in our 386 machines because of its speed and [ease of] configuration," said Claude King, senior systems programmer at the University of Florida's College

of Journalism and Communications in Gainesville.

According to King, the organization tested 3Com's adapter against Western Digital's — and 3Com's was faster. "Was it the card or the driver? We don't know. We only know the final product was faster," he said.

Scott Hayes, network engineer at Word-Perfect Corp. in Orem, Utah, mentioned the same two characteristics. "We're still testing it, but so far, it's a lot speedier than [3Com's other 16-bit] card," he said. "And you can change configurations on the fly; that's good."

EtherLink 16 TP is available now for \$479 per single adapter and \$2,195 for a five pack. ■

## Users wary of moving applications

*continued from page 19*

in Baltimore, acknowledged that management approval to downsize complex applications will come slowly.

"If we went back and analyzed the hardware and the intensive I/O requirements of a test application we did, maybe we would have seen that moving to the LAN was not the best idea," explained Watts.

The National Education Association (NEA) in Washington, D.C., has implemented LANs in its headquarters and in the offices of many state affiliates. Through the LANs, personal computer users can access a membership data base that resides on a mainframe.

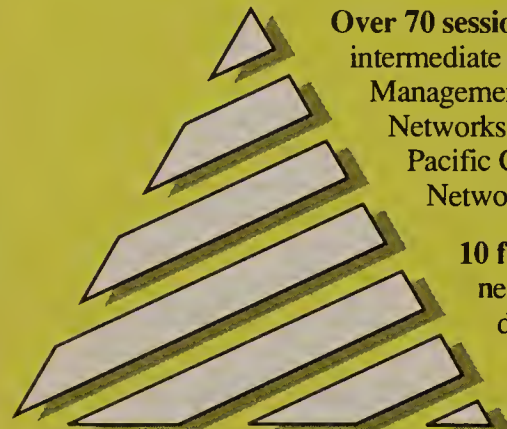
Ken Pannell, associate manager of the NEA's data center, said management has not downsized the membership data base to the LAN for several reasons.

"Their chief concern is the reliability of the data. On the mainframe, it can be kept better organized, more current and more

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“We have to let people know about the tools and the approaches that are now available,” Walker said.

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secure. And we don't want to lose that control,” he said.

Karl Thornton, manager of technical services for SmithKline Beecham in Philadelphia, said management believes it would take years to develop a staff with the skills required to downsize core business applications. As a result, the company has adopted a two-tier approach to applications.

Existing applications will remain on larger systems, and new applications will be targeted to LANs. “It's a gradual transition. We're going to start slowly,” he explained.

Transamerica Commercial Finance is actually looking to move a partially downsized application back to the mainframe. The company may take segments of a custom financial application running on LANs in 13 offices and move them to an IBM 3090 to maintain compatibility and control across divisions.

Microsoft Corp.'s Dwayne Walker, a senior product business manager in the Server Applications Group, acknowledged that not enough is known about downsizing. He said early efforts at downsizing often required homegrown tools or major resources to get the job done. With new software development tools being introduced, Walker is confident these efforts will now be smoother.

“Education is the next hurdle. We have to let people know about the tools and the approaches that are now available,” Walker said.

At DB/Expo '91 in San Francisco last week, Dwight Davis, director of marketing at Novell, Inc.'s Developmental Products Division in Austin, Texas, agreed that education is vital to promote downsizing and client/server computing. “Management doesn't buy technology; they buy a solution to a problem,” Davis said. ■

# MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

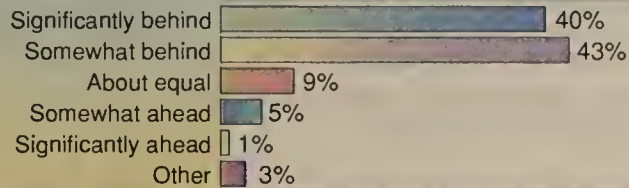
## Worth Noting

“A central [electronic data interchange] gateway can handle communications but not politics.”

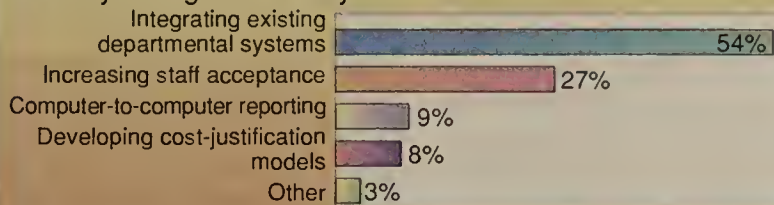
Sandy Whitson  
EDI business manager  
Hewlett-Packard Co.  
Palo Alto, Calif.

## Diagnosing health care information systems

Are hospitals ahead or behind other businesses in applying IS?



What will be the most important IS issue in the health care industry during the next 2 years?



Percentages exceed 100 due to rounding.

Figures were based on responses from more than 400 IS managers attending the Healthcare Information and Management Systems Society (HIMSS) conference in February.

IS = Information systems

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: HIMSS, CHICAGO, AND HEWLETT-PACKARD CO., PALO ALTO, CALIF.

## Report: Health care firms slow to apply technology

IS execs say hospitals lag behind other businesses.

By Wayne Eckerson  
Senior Editor

CHICAGO — An overwhelming majority of information systems (IS) managers in the health care industry believe hospitals lag behind other businesses when it comes to applying information technology, according to a recent survey.

Nearly 85% of hospital IS managers surveyed say their medical institutions are either somewhat behind or significantly behind other businesses in deploying information technology. The survey was jointly sponsored

month. More than three-quarters (79%) of the respondents work at hospitals with over 250 beds.

Other significant findings show:

- Hospitals plan to invest the bulk of their IS resources in developing patient care and bedside systems during the next two years.

- Hospitals only partially understand the potential benefits of using emerging open computing standards for the health care industry and blame vendors for not adequately explaining the benefits of such standards.

- Computer systems have helped improve the financial health of hospitals.

- On-line medical records and decision support systems are the two technologies that will have the greatest potential for improving hospital services in the future.

### Hospitals playing catch-up

In the past, hospitals had little financial incentive to reduce costs and improve operations through the innovative use of IS, according to John Glaser, president of HIMSS and senior vice-president of Brigham & Women's Hospital in Boston. But that has changed.

In the mid-1980s, the federal government implemented a new Medicare payment plan that established fees for every medical procedure. Those fees are fixed, regardless of the hospital's costs to deliver the care, Glaser said.

“Until the advent of the new [Medicare] payment plan, hospitals didn't feel a real need to look for innovative ways to apply information technology as a means

(continued on page 22)

## Companies strive to consolidate EDI nets

Firms look to cut costs, offer better service via centralized operations, standardized systems.

By Wayne Eckerson  
Senior Editor

Many large companies are consolidating their disparate EDI systems and managing them centrally in an effort to offer better customer service and cut costs.

Supporting multiple, independent electronic data interchange programs duplicates efforts and aggravates large trading partners that have to spend thousands of dollars customizing EDI systems in order to communicate with different groups within the same company, EDI users say.

To bring order to their EDI programs, companies are building centralized gateways — mini-computers or mainframes running communications software — to handle communications to the outside world. These gateways often support a variety of EDI tools, including translation and mapping software, as well as data bases of trading partner pro-

files and transaction records.

Translation software is used to convert an EDI data stream into a computer-readable format. Mapping software distributes or “maps” the translated data to appropriate records and fields within user applications.

“Many companies decide to centralize EDI after top management hears complaints from trading partners that maintaining a multiplicity of EDI systems and standards has made it more expensive and confusing to do business with them,” said David Taylor, vice-president and director of Inter-Enterprise Systems at Gartner Group, Inc., a consulting and market research firm in Stamford, Conn.

Taylor said it can cost trading partners with mainframe-based EDI systems anywhere from \$100,000 to \$2 million to support multiple EDI standards.

(continued on page 22)

## GUIDELINES

BY ERIC SCHMALL

## Net contracts need legal as well as IS expertise

When's the last time you hugged your corporate attorney? In a competitive industry like telecommunications, in which network managers engage in countless contract negotiations with vendors and carriers, it's imperative that net managers take advantage of the talents of their corporate legal departments.

Traditionally, network managers have maintained limited contact with corporate lawyers. Net managers usually do not consult with the firm's lawyers until they have finished negotiating a contract and want the legal department to approve it. While this approach may have been adequate in the days prior to divestiture, today's competitive environment requires that lawyers and net managers establish a solid working relationship.

The first thing that net managers need to do is sit down with corporate lawyers and establish the legal definition of several networking terms, such as network outage. Once such definitions are determined, they can be worked into the language of network contracts.

In addition, network managers need to familiarize corporate lawyers with the nature of the network industry and keep them abreast of new developments. Net managers should explain the structure of tariffs, as well as basic voice and data communications concepts, among other things. They also have to educate attorneys about the mission and objectives of the network department and the nature of the department's relationships with its major vendors.

Once net managers and corporate attorneys begin speaking the same language and working in concert, they can be a more

(continued on page 22)

## Association Watch

The National ROLM User's Group annual spring conference will be held from April 9 to 12 at the Fort Lauderdale Marriott Hotel & Marina in Florida.

Two of the primary seminars at the conference will discuss call center management and private branch exchange-to-host interfaces. The seminars will include a discussion of Rolm Co.'s new and existing product offerings in these areas.

The cost of the conference is \$225.

For more information, contact Mary Ann Weider at (716) 275-7352.

Competition for the 1991 Enterprise Network Excellence (ENNE) Awards has officially begun as nominations were recently issued to more than 2,000 companies serving the enterprise networking industry.

Sponsored by Network World and NetWorld '91, the ENNE Awards program conducts an annual search for firms displaying excellence within the industry.

The winning entries will be those applications that best emphasize the value of enterprise networks in a business environment.

ENNE Awards will be presented during a ceremony at NetWorld '91 to winners in four user categories — global, national, regional and single site. In addition, an award will be given to an enterprise integrator.

For more information, contact Stephen Yesenosky at (212) 972-0230. ■

# Users say firms aligning IS to better serve business

By Wayne Eckerson  
Senior Editor

AMELIA ISLAND, Fla. — To maximize the benefits of information technology, users are restructuring their information systems (IS) organizations in order to make them more responsive to business needs.

IS and network professionals at many companies are working closer than ever with business managers to redesign business processes and more effectively apply information technology, said users attending a recent conference here sponsored by *CIO Magazine*.

"If you wed people who know the business and people who know technology and let them share ideas, there's no limit to what they can achieve," said Dudley Cooke, president of The Executive Insight Group, Inc., a consultancy in Bryn Mawr, Pa.

E.I. du Pont de Nemours & Co. has decentralized its IS organization in an effort to "stimulate and enable du Pont's business units to maximize the benefits of information technology and systems," said Raymond Cairns, senior vice-president of IS at the Wilmington, Del., chemical conglomerate.

To better align IS and business strategies, du Pont has farmed out much of its IS staff to business units, regional groups and functional groups, such as finance and accounting. These staffers report to business managers in these areas and work with them to develop an information technology strategy that meets their requirements and business objectives.

"Our goal is to make IS an integral part of the business team,"

Cairns said. "This will happen as executives begin to see and appreciate how IS can help them achieve their goals."

Like du Pont, the IS division at Electronic Data Systems Corp. (EDS) has begun establishing partnerships with functional groups within the company.

These partnerships, or cross-functional teams, look at ways to optimize or redesign existing business practices, considering how information technology

**T**o better align IS and business, du Pont has farmed out its IS staff to business units.

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might be used to support the new processes, said Pete Mefford, chief information officer (CIO) at EDS.

"It is a very iterative process in which both sides share their expertise and knowledge to come up with the most desirable solution," Mefford said.

## Business process redesign

John Gigerich, CIO at Continental Bank Corp. of Illinois in Chicago, said he believes that IS managers should take the initiative to establish constructive dialogue with business executives that will effect positive change within the corporation.

In every new systems project, Continental Bank's IS group

brings in a management consultant to sit down with the IS team and end users to examine business processes that will be affected by the project.

The team tries to rethink and optimize the processes before applying technology, Gigerich said. In this way, the bank can maximize the value of its information technology investments and bring the greatest benefit to users.

Companies that fail to wed business and technology interests can wind up automating outdated, inefficient processes that may not be driving the firm toward its strategic objectives, said Tom Pettibone, senior vice-president of IS at New York Life Insurance Co. in New York.

Pettibone said companies that merely automate existing processes can never hope to gain more than a 10% to 20% increase in productivity. Companies that redesign business processes before applying technology can achieve 60% or higher productivity gains, he said.

While bringing business and technical employees together can yield significant gains, it may not be enough to leverage the full potential of information technology, said Alan Fusfeld, president and chief executive officer of Generics North America, a management consulting firm in Waltham, Mass.

Fusfeld said IS groups should view themselves as businesses and lay out plans for marketing, research and development, finance, user support and training — all the things that businesses must consider and plan for in order to achieve their objectives.

"CIOs must develop an [information technology] business plan as if they are the CEO of their company," Fusfeld said. "An operations plan is just not enough." ■

## Companies consolidate EDI

*continued from page 21*

One of the major reasons Texas Instruments, Inc. centralized its EDI program was to make it easier for trading partners to do business with the company, said Ken Shoquist, manager of procurement and EDI systems at TI.

"When you are a highly decentralized firm with so many diverse products and overlapping customers, it's a competitive advantage to have one set of requirements," Shoquist said.

In 1987, TI consolidated about eight EDI programs that had evolved separately in the firm's five divisions, as well as within geographical groups within those divisions. Top management established an EDI management team to build a communications gateway for EDI and develop a host of EDI tools.

By consolidating parallel EDI programs, TI has eliminated redundant efforts, reducing the costs of using EDI. Since 1987, centralizing EDI has also helped TI boost the number of trading partners from 300 to 1,600.

Two years ago, the Sears Merchandise Group decided to establish a central EDI group to oversee migration to X12 standards.

The group would ensure uniform implementation of standards among all business groups, manage trading partner relationships and define the transaction sets each Sears Merchandise division would use in communicating with its trading partners, said Lance Dailey, director of EDI implementation at Sears Merchandise in Chicago.

"It was either centralize or have complete anarchy," Dailey said, adding that if each of the Sears Merchandise divisions implemented a slightly different version of the X12 standard, it would have burdened and confused suppliers. Standardizing EDI operations through a central group has made it easier for Sears Merchandise to persuade suppliers to start using EDI or convert from proprietary to X12 formats.

Since centralizing the EDI function, Sears Merchandise has added 650 trading partners for a total of 1,350. Of that number, 800 are now using X12 standards, Dailey said.

## Paved with potholes

Despite the benefits, some companies are finding the road to centralizing EDI full of potholes.

Three years ago, Hewlett-Packard Co. began consolidating EDI programs that had evolved independently in different functional departments such as manufacturing procurement, order processing and accounts payable. Each group had established its own EDI gateways and management teams, and each was using different EDI standards.

Besides grossly duplicating efforts, the multiple EDI programs were making HP "look like a non-integrated company," said Sandy Whitson, EDI business manager for HP in Palo Alto, Calif.

When HP formed a cross-functional team to study the problem, all the groups agreed to centralize EDI and place it under the control of a corporate EDI team, which they dubbed EDI Central.

But three months ago, after EDI Central finished building a central EDI gateway, complete with custom translation and mapping software, several of the functional groups and business units balked at relinquishing control of EDI, Whitson said.

The groups complained that they could implement new EDI services and add trading partners more quickly and less expensively than the corporate group.

"We built the [gateway], and now we can't get them to use it," Whitson said.

To solve its dilemma, EDI Central will hand back to the business units responsibility for mapping EDI to business applications and establishing trading partner profiles, Whitson said. This development work will be sent to EDI Central, which will load it into the central gateway.

"We aren't giving up centralization, but we're tweaking it so it works," Whitson said. ■

## Report: Health care firms slow

*continued from page 21*

to reduce costs and deliver patient care more efficiently," Glaser said.

Many hospitals are now bringing in IS managers from outside the health care industry to modernize their computing and communications infrastructure, said Frank Poggio, president of Health Micro Data Systems, a provider of local-area network-based health care systems based in Madison, Wis., and a former IS manager at the University of Wisconsin Hospital.

Poggio said he has seen increased interest, especially among midsize hospitals, to downsize from mainframe systems to more economical micro-computer LANs.

But as hospitals become more sophisticated IS users, they face several challenges.

According to the HIMSS sur-

vey, 54% of those interviewed said integrating multivendor departmental systems is their biggest challenge.

Richard Bretagne, chief information officer at Northwestern Memorial Hospital in Chicago, said most hospitals are considering emerging health care systems standards, such as Health Level 7 (HL7) and Medix, to integrate disparate systems.

"It's really the only way to do it," said Bretagne, who is using the HL7 standard to integrate multiple departmental systems across a fiber network.

But Glaser said the standards are not fully developed, which has forced many hospitals to call in systems integrators to aid in linking departmental systems.

Glaser added that the general lack of understanding of standards among hospitals, as evi-

denced by the survey, has impeded the growth of open systems in health care.

But integrating systems is only half the battle. The survey indicated that getting hospital staff, especially physicians and nurses, to use new technologies is a major challenge.

Half the survey respondents said a friendlier user interface would significantly increase the use of information systems in their hospitals. Other respondents said voice recognition (24%), expert systems (12%) and handwriting recognition (4%) would make systems more attractive.

However, implementing a new interface may not be enough.

"Even though you may have a slick user interface, physicians may find it easier and quicker to jot their notes on paper, rather than log into a system and burrow through menus or use a light pen," Glaser said. ■

## Nets need legal expertise

*continued from page 21*

effective negotiating team.

A skilled attorney, for example, can strengthen agreements with equipment and service providers.

The lawyer may point to a clause that shows that a vendor has built in very small penalties for failure to deliver equipment. The lawyer may also suggest areas in which the network department may end up without recourse to correct vendor incompetence because of restrictive language buried deep in the contract.

By establishing a close work-

ing relationship with attorneys, net managers can learn a lot about negotiating tactics.

They can also turn to the attorneys for advice on how to resolve problems bogging down a specific negotiation session. Lawyers can easily discern which issues represent the highest priorities to each party in a negotiation and can offer ways to break negotiation deadlock.

Network managers need to make the effort to educate lawyers about their firm's network activities and strategies. In this way, corporate lawyers can become a valuable source of information and guidance, as well as full partners in contract negotiations. ■

# INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

## World News

AT&T last week announced new volume discounts for its International Accunet Packet Service (IAPS), extending the service to seven countries and instituting a major price reduction for service to the U.K.

Now users of AT&T's international, X.25-based public packet-switched service will receive 5% discounts for total monthly expenditures between \$500 and \$1,000, 10% discounts for monthly expenditures between \$1,000 and \$5,000, and 20% discounts for monthly expenditures greater than \$10,000. AT&T is also commencing service to Argentina, Bulgaria, Colombia, Honduras, Mauritius, Portugal and Uruguay, where users will access IAPS via local public data networks.

AT&T is also reducing the current service rate to the U.K. to \$6 per hour plus \$6 per kilosegment of data transmitted, down from \$11 per hour plus \$8 per kilosegment transmitted.

Jeanne-Marie Jarka, IAPS product marketing manager in Morristown, N.J., said AT&T is offering the discounts and cutting prices to meet competitive pressure from other providers.

Canada's largest regional carrier, **Bell Canada**, last week issued findings from a study that concludes resellers that use private leased circuits to sell public switched telephone services are flourishing.

The Canadian resale mar-

(continued on page 24)

## U.K. competition leads BT to explore foreign markets

British Telecom aims to be more customer-driven.

By Bob Brown  
Senior Editor

LONDON — The U.K. government's recent approval of full competition in its telecommunications market will force British Telecommunications PLC to look for new business overseas, company officials said.

For about a year now, British Telecom has had a program in place designed to help it shed its image of a bureaucratic monopoly in favor of becoming regarded as a customer-driven organization.

The company capped that effort two weeks ago by merging its BT Tymnet, Inc. and British Telecom, Inc. subsidiaries into a single business unit called BT North America, Inc. and by adopting a trumpet-bearing herald as the company's corporate logo.

A British Telecom official here also confirmed that the carrier plans to sign an agreement soon with several international partners allowing British Telecom "to better meet the global outsourcing needs of multinational users." No further details were available, a company spokesman said.

"This is a culmination of a complete reorganization of British Telecom over the past year," said Ron Bamberg, vice-president of business development and planning at BT North America. "It's aimed at increasing the focus on customers."

Ken McGee, program director at market research firm Gartner Group, Inc. of Stamford, Conn., said the moves "fit with British Telecom's whole global network strategy."

British Telecom's new look coincides with the recent decision by the U.K.'s Department of

Trade and Industry to discard the telecommunications industry's existing duopoly system in favor of an open market ("U.K. embraces plan for full competition in net arena," *NW*, March 11). The duopoly system allows only British Telecom and Mercury Communications, Ltd. to compete in the U.K. market.

"Now that British Telecom expects to get more competition at home, it needs to become more aggressive in other parts of the world," including North America, said Andrew Harrington, European telecommunications analyst for the investment firm of Salomon Brothers International, Ltd. in London.

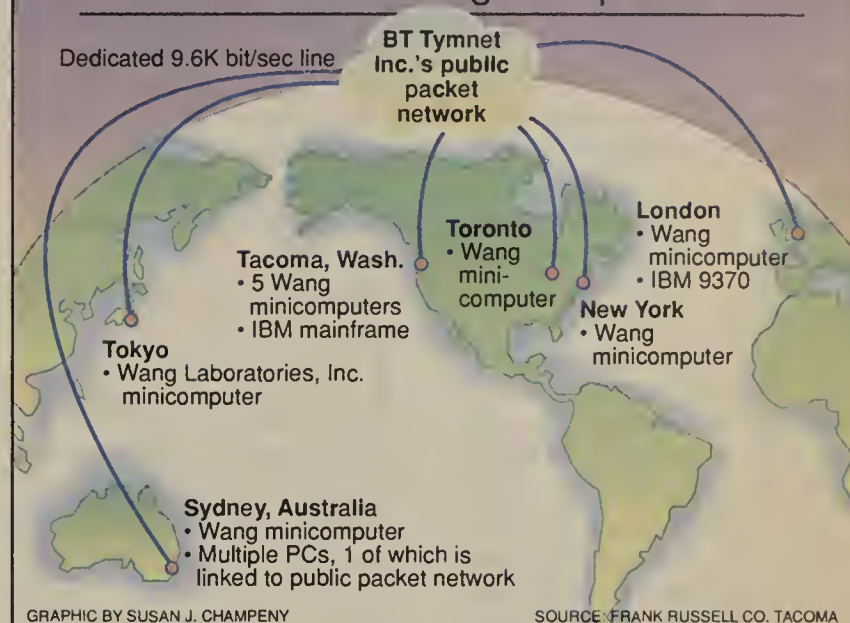
By consolidating BT Tymnet with British Telecom, Inc. into a single unit, British Telecom hopes to simplify contacts between the company and customers, said Mark Winther, a vice-president at market research firm LINK Resources Corp. in New York.

British Telecom has already melded the British Telecom, Inc. and BT Tymnet sales forces into one to give U.S. network managers a single point of contact for all British Telecom products and services sold in the U.S., Bamberg said.

Although BT Tymnet will cease to exist as a legal entity, "Tymnet" will be retained as the name of the company's packet-switching network.

Dick Kampa, business manager for CoveragePlus, a Motorola, Inc. company in Schaumburg, Ill., and a BT Tymnet customer, said he is hopeful British Telecom's growing global focus will make it easier for him when dealing with other Motorola employees in various parts of the world. □

## Frank Russell Co.'s global packet net



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: FRANK RUSSELL CO. TACOMA

## Global users move applications to U.S.

Users close data sites in London to cut costs, give European users host access via public data nets.

By Barton Crockett  
Senior Editor

LONDON — Two users with global networks have decided to pull the plug on computers here and move applications to U.S. sites that European employees will access via international public data networks.

While the companies concede that relocating applications to the U.S. will lengthen response times for end users in Europe, they said the trade-off is worth the cost savings.

Financial consultancy Frank Russell Co., based in Tacoma, Wash., and a major consulting firm in the Northeast, which requested anonymity, are consolidating data processing operations by using public data services from BT Tymnet, Inc. and the IBM Information Network, respectively.

"Within two to three years, we expect to be saving \$200,000 a

year," said Gene Johanson, director of computer services at Frank Russell.

According to Johanson, Frank Russell could only cost-justify the move by using a public data network.

The company is mothballing its IBM 9370 minicomputer in London and moving data base and report generation applications supported on the minicomputer to an IBM mainframe in Tacoma.

Users working on about 24 terminals in London will access the applications via a 9.6K bit/sec dedicated link to a local node on BT Tymnet's international public packet network. BT Tymnet will shuttle traffic to the Tacoma data center via a permanent virtual circuit. Johanson said his company will save money by eliminating personnel and maintenance expenditures associated

(continued on page 24)

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# CCITT to vote on plan for private net liberalization

By Barton Crockett  
Senior Editor

GENEVA — The Consultative Committee for International Telephony and Telegraphy recently took a major step toward formally adopting a new recommendation that encourages countries around the world to adopt a liberal regulatory system for international private networks.

At a meeting here last month, the CCITT said it would move to vote on a new version of CCITT Recommendation D.1 — "General Principles for the Lease of International Private Telecommunications Circuits and Networks" — that encourages countries to drop most restrictions on the operation of international private networks.

Among other things, the new CCITT recommendation advocates that countries let users freely subdivide international circuits into multiple channels and link them with other private lines. The new recommendation also

encourages countries to let users resell net services via international private lines, provided they do not infringe on carrier monopolies.

Additionally, the new recommendation encourages countries

**The recommendation encourages countries to let users resell net services via private lines.**

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to let users interconnect one or both ends of international private lines to public networks. It also urges countries to require carriers to base international private-line tariffs on provisioning costs, to charge users generally flat-rate tariffs and to prohibit carriers

from levying tariffs that discriminate against groups of users or vendors.

Officials at the U.S. Department of State, which represents the U.S. at CCITT meetings, hailed the decision, saying it marks a major departure from earlier versions of Recommendation D.1, which encouraged carriers around the world to adopt a restrictive regulatory regime. Since most countries base their international private net regulations on the recommendation, State Department officials said the adoption of Recommendation D.1 will stimulate liberal reforms throughout the world.

"This was a great success," said a spokesman for the State Department's Bureau of International Communications and Information Policy in Washington, D.C. He said the new CCITT Recommendation D.1 will be sent out within 30 days to all CCITT member countries for final approval. These countries will then have 90 days to return their ballot. If 70% of the countries that vote on the new recommendation approve it — as is expected — the recommendation will be formally adopted by the CCITT. ■

## World News

*continued from page 23*

ket is growing due to recent moves to significantly reduce regulatory restrictions on resellers. As a result, in 1990, Bell Canada estimated that the country's five largest resellers had combined revenues of more than \$70 million Canadian, or nearly 2% of the long-haul, public switched service market in Canada.

Bell Canada said that by 1996, conservative estimates indicate that the five top resellers will control about 7.4% of the Canadian long-distance market, or about \$500 million Canadian in revenues. Bell Canada said one of the largest resale markets is for service between the U.S. and Canada. Bell Canada also predicted that U.S. carriers will move aggressively to enter the Canadian resale market. Already, Cable & Wireless Communications, Inc. is starting up a resale operation there.

Australia's government-owned domestic carrier, **Telecom Australia**, last week said it has completed the first phase of pilot tests for a public switched

data service based on the IEEE 802.6 metropolitan-area network standard.

Telecom Australia says its metropolitan net service, called Fastpac, will be available at transmission rates of 2M and 20M bit/sec. The first phase of the Fastpac trials was conducted at Telecom Australia's research laboratories in Melbourne, Australia. The carrier said it plans to extend trials to six customer sites during the next nine to 12 months. Telecom Australia added that it expects to make Fastpac service available throughout Australia over the next five years, and to interconnect its metropolitan-area network service with Switched Multi-megabit Data Services from U.S. carriers and similar offerings from European carriers.

The **European Telecommunications Standards Institute (ETSI)** last week said its Public Switched Telecommunication Network workshop has proposed setting up special project teams to work toward conformance testing harmonization for analog telephony equipment. ETSI's technical assembly will vote on the proposal in early June. ■

## Users move applications

*continued from page 23*  
with the 9370.

The reliability of BT Tymnet's public packet net played a key role in the decision, Johanson said.

"The reliability factor was critical," he said. "London doesn't want that network down when they need it."

Another factor that helped Frank Russell make the move was BT Tymnet's flat-rate pricing, which fixes the user's expenditures on public packet traffic for six offices around the world at \$18,000 a month (see graphic, page 23). Frank Russell is guaranteed the flat monthly rate as long as total data volume for each office falls below 10,000 kilocharacters per month.

Frank Russell's other offices also access the BT Tymnet net-

work via 9.6K bit/sec dedicated links to local Tymnet nodes.

"Keeping expenditures fixed made this much easier to sell to the businesspeople in London," Johanson said.

On the downside, users in London will face slower response times. For example, users in London are now able to log onto applications on the 9370 within one or two seconds. After the applications are moved to Tacoma, the time needed to remotely log on will increase to about four seconds.

But Johanson said the cost savings justify the change. He added that users do not mind the slower response times. Johanson also said that Frank Russell may be able to improve response times by using frame relay, an emerging technology that improves X.25 throughput by stripping off many X.25 error correction protocols.

BT Tymnet is planning to roll out a public frame relay service this summer ("BT Tymnet to reveal frame relay service," *NW*, Jan. 28). Johanson said that Frank Russell has asked to be a beta site for the offering.

**The reliability of BT Tymnet's packet net played a key role in the decision, Johanson said.**

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Johanson conceded that response times would be better if the company were to install an international private-line network — an option that was considered. But the international private-line

net would cost about \$28,000 per month in transmission costs alone, which was too expensive to justify.

### Shutting down a 4381

The consulting firm expects to save money by shutting down an IBM 4381 mainframe in a London suburb that currently supports data base, financial and electronic mail applications for dozens of users in company offices throughout Europe.

According to the director of data communications for the firm, four offices in the U.K. and four offices elsewhere in Europe now access the London mainframe via dedicated links ranging in speed from analog lines to 64K bit/sec.

But the data communications manager said the consulting firm now realizes it can save "a significant amount of money" by dismantling the European data cen-

ter and private-line network, and moving applications to the company's main data center on the East Coast of the U.S. Users in Europe then will access the U.S. data center via the IBM Information Network.

The data communications manager said the consulting firm will save money by eliminating personnel and facilities expenditures for the London data center, although these costs were not detailed. Meanwhile, costs in the U.S. data center will remain essentially flat.

But the data communications manager acknowledged that users in Europe will endure noticeable increases in response times.

"It's definitely going to be worse than a private line," the manager said. "[IBM wasn't] trying to hide that from us."

However, company officials believe the savings are worth the slower response times. ■



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# PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

## First Look

**Source unveils 3270 emulation for laptops**

**Source Communications** has introduced an IBM 3270 terminal-emulation product for laptop computer users that consists of software and a small stand-alone unit about the size of a cigarette package.

The **Omniport** plugs into a portable computer's serial communications port and lets the device support Synchronous Data Link Control links to IBM 37XX front-end processors. With **Resourceful SNA/3270**, Omniport terminal-emulation software, the microcomputer can emulate a 3270 controller, a 3278/3279 Model 2 display station or a 3287 printer.

The product supports as many as eight concurrent logical unit sessions, three of which can be printer sessions. Switching between display sessions can be accomplished by hitting a single key.

*Source Communications, 1801 Avenue of the Stars, Suite 640, Los Angeles, Calif. 90067; (213) 277-1061.*

**Hayes offers 2,400 bit/sec modem for laptops**

**Hayes Microcomputer Products, Inc.** has announced the availability of the Pocket Edition 2400, a 3-ounce, 3-in.-long 2,400 bit/sec modem for use with laptop computers.

The modem is powered through the telephone line and the computer's RS-232 serial port, eliminating the need for batteries or an external power supply.

Pocket Edition 2400 comes with cables, Smartcom EZ communications software and a carrying case that can be attached to the strap of the computer carrying case.

Smartcom EZ provides a context-sensitive on-line help system that gives detailed information and cross-references to related topics in order to simplify the task of establishing links for first-time users.

The modem, which also supports transmission at 300 and 1,200 bit/sec, costs \$179.

*Hayes Microcomputer Products, Inc. 705 Westech Drive, Norcross, Ga. 30092; (404) 449-8791. ☐*

## QMS offers new multinet group printer

MOBILE, Ala. — Printer maker QMS, Inc. is scheduled to introduce today a 20-page-per-minute laser printer that can support 20 to 50 departmental users in a multinet environment.

The \$15,995 QMS-PS 2000 tops the existing QMS-PS line and is designed to provide a low-cost departmental printing option for users with personal computer, Apple Computer, Inc. Macintosh, Digital Equipment Corp. or Unix-based systems.

Like other printers in the product family, the QMS-PS 2000 can support as many as four interfaces, each of which can be used simultaneously.

The interfaces include: an RS-232 serial port; a parallel interface that can be used to support personal computer local-area networks; an AppleTalk interface for Apple LANs; and an Ethernet interface supporting DEC's DECnet or the Transmission Control Protocol/Internet Protocol.

IBM Token-Ring and EtherTalk interfaces are scheduled for shipment later this year.

Each interface is backed up by a buffer, allowing any interface to accept data while others are being used. The size of each buffer can be changed to meet the particular printing requirements of the environment.

The QMS-PS 2000 also offers

the ability to combine random-access memory with hard disk storage as one common pool of accessible memory that can be used for print spooling. This feature, combined with the support for multiple interfaces, enables the printer to simultaneously accept jobs from multiple hosts.

An existing proprietary QMS technology, called Emulation Sensing Processor, enables the QMS-PS 2000 to determine the page description language of the data files coming in over those interfaces and adjust accordingly.

The printer can distinguish between Adobe Systems, Inc.'s PostScript, Hewlett-Packard Co.'s printer control language (used with the HP LaserJet), HP's graphics language (used with HP plotters) and, as an option, the language used with DEC's LNO3+ laser printer.

The ability to switch on the fly from one printer control language to another eliminates the need for users to physically change a printer switch setting or add software commands to each print job in order to tell the printer which language is required.

Standard features of the Reduced Instruction Set Computer-based printer include two 250-sheet adjustable-size paper input cassettes, a 100-sheet output tray and a second 1,500-sheet output stacker. A 1,000-sheet input bin and duplexer are available as an option.

The printer is scheduled to ship in May.

For more information, contact QMS at 1 Magnum Pass, P.O. Box 81250, Mobile, Ala. 36689, or call (205) 633-4300. ☐

## Bridge/router supports Shortest Path First routing

HUNTINGTON BEACH, Calif. — RAD Network Devices, Inc. recently announced a remote bridge/router that links 4M and 16M bit/sec token-ring nets over a variety of wide-area links.

The Remote Token Bridge/router (RTB) 16 is a two-board set that fits into an IBM Personal Computer AT and provides a single connection for a token-ring local-area network to link as many as four wide-area lines.

The RTB 16 uses RAD's Source Routing and Transparent software, which supports any token-ring environment, regardless of whether data is transmitted in source routing or non-source routing packets, according to Gershon Schatzberg, a systems engineering manager with the company.

The RTB 16 also can optimize

the transmission of source routing packets because the device supports RAD's Shortest Path First routing algorithm, a derivation of the emerging Open Shortest Path First protocol.

RAD's Shortest Path First algorithm determines which transmission route has the least delay by broadcasting messages across the network. The first response indicates the best available route, and data is directed over it. The RTB 16 supports wide-area connections ranging from 4.8K to 2.048M bit/sec European T-1 speeds.

The RTB 16 bridge/routers are available now; prices range from \$6,495 to \$9,450.

For more information, contact RAD at 7711 Center Drive, Huntington Beach, Calif. 92647, or call (714) 891-1964. ☐

## Oracle boosts DBMS' OLTP capabilities

Parallel Server ups processing time for clusters, retools Oracle 6.0 to run on DOS, OS/2 devices.

By Timothy O'Brien  
West Coast Bureau Chief

REDWOOD SHORES, Calif. — Oracle Corp. recently announced the Oracle Parallel Server, a module for its relational data base management system that enables a cluster of networked computers to rival the transaction processing throughput of mainframe-based systems.

The company also announced Version 6.0 of its Oracle Tools and Database for use on OS/2 and MS-DOS-based personal computers, which will let users downsize DBMS applications to run on DOS or OS/2 devices.

Initially, the Oracle Parallel Server will run on Digital Equipment Corp. VAX and MicroVAX minicomputers in VAXcluster environments, Oracle said. Over time, the company plans to roll out support for Unix hosts and massively parallel computers.

The server enables users to form loosely coupled computer environments that are linked over a network and share a common set of disks. Along with massively parallel supercomputers, the DBMS add-on provides users with increased horsepower and redundancy to address high-performance on-line transaction processing requirements.

By distributing the data base work load to each computer in a clustered system, the server uses a technique called cache management to ensure transaction and data integrity, minimize bottlenecks and coordinate messaging between computers.

DEC officials praised Oracle for coming up with a method to boost transaction processing in computer clusters. "This new Oracle technology now combines many VAX systems into a unified server and is a milestone in VAX-cluster performance," said Bill Demmer, a senior vice-president at DEC.

Both Pyramid Technology Corp. and Sequent Computer Systems, Inc. have announced plans to support the Oracle Parallel Server on high-performance Unix systems.

"By supporting parallel systems and multiprocessor systems for client/server applications, Oracle will be positioned to support whatever architecture offers the end user the best price/performance," said Jim Reilly, Oracle senior director of marketing.

Separately, Oracle unveiled Version 6.0 of its Oracle Tools and Database, which packages DBMS application development tools with the Oracle data base software.

By offering a version of the software to run on OS/2 and DOS devices, Oracle will enable users to downsize applications to run on those platforms.

Until now, Version 6.0 has been available only for larger systems, such as DEC VAXs, and users have been unable to develop applications that link older ver-

“Oracle will be able to support whatever architecture offers the best price/performance.”

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sions of Oracle running on personal computers to host applications developed with Version 6.0 of the software.

### Other enhancements

Along with the latest version of the data base software, Version 6.0 includes upgrades in the integrated tool set, including pull-down menus to create forms, pop-up pages that list software variables and closer integration between SQL Menu and SQL Forms.

"With the arrival of Oracle's Version 6.0 tool set, we are able to build fully functioning applications in the network environment in which they will run," said David Kreines, project manager for Educational Testing Service in Princeton, N.J.

Oracle Tools and Database for MS-DOS and OS/2 Version 6.0 is expected to be available in May at a cost of \$1,499. However, Oracle said it will ship the tools portion of the software separately this month for \$899.

The vendor said the Oracle Parallel Server will be available only for DEC's VAXclusters in April. Pricing is based on hardware configurations.

For further information, contact Oracle at 500 Oracle Pkwy., Redwood Shores, Calif. 94065, or call (415) 506-7000. ☐

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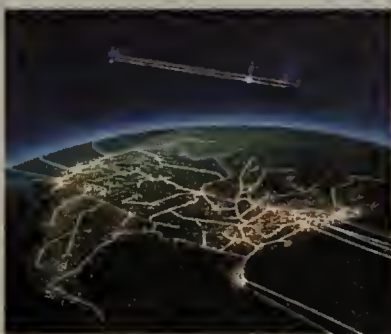
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# OPINIONS

## CARRIER ADVERTISING

BY J.A. HOOKE

# A small difference turns into big savings

You wouldn't think that such small figures as two seconds or one percentage point would matter in a typical business day. But when it comes to telecommunications, ignoring those seconds and percentages can be tantamount to losing a competitive edge.

I'm talking specifically about the impact that the behavior of callers to 800 numbers has on users' bottom line. AT&T Bell Laboratories conducts studies of consumers' phone behavior and of the performance of major interexchange carriers' networks, including our own. The results, which clearly reveal performance differences, are used as internal quality controls and to educate users.

**A** two-second delay in setup time will cause six calls per thousand to be abandoned.

▲▲▲

Our studies of calling behavior show that small differences in performance can have a major impact on 800 customers' financial results. For example, call setup times for AT&T's switched 800 services — as measured in the latest Bell Labs quarterly survey, conducted in the last quarter of 1990 — are an average of two seconds faster than our major competitors' times. Also, our nonblocking performance is about one percentage point better than our competitors' average.

In addition, research from our calling behavior surveys, most recently conducted in late 1988, shows that callers who encounter delays in reaching 800 numbers abandon their transactions; the greater the delay, the more callers lost. What's more, many callers don't try again. This boosts the average of those who won't ever get through after their initial attempt is blocked to 60%.

We find that a two-second delay in call setup time will cause six calls per thousand to be abandoned. Ultimately, three of these six callers won't reach the 800 number. Add to this a 1% increase in blocking. That, according to our figures, causes 10 calls per thousand to be blocked and six of those won't ever be completed. Thus, Bell Labs finds that an 800 service customer whose callers are experiencing these network performance deficiencies will lose an average of nine revenue opportunities per thousand calls.

Based on our experience, it is fair to assume that each lost call represents the loss of an opportunity worth \$50 in revenue. But you may want to run the following calculations based on your own average per call revenue.

For nine lost calls at \$50 each, the total situation amounts to a loss of \$450 in potential per thousand calls. Let's also assume a 30% incremental profit margin on these revenues. Using the \$450 figure, the company's bottom line is thus \$135 poorer — all caused by the delay and call blocking.

The real eye-opener is when you consider how this affects the cost of 800 service. Using an average of 50 cents per call for AT&T's switched 800 services, our customers pay \$500 per thousand calls. Based on the above assumptions, they realize a \$135 profit through the superior performance of our network. This amounts to a savings of 27% (\$135 divided by \$500) — by using AT&T.

That's why our advertising talks about the advantages of quicker call setup time and less call blocking than our competitors. It's those details that, for a business, can make the difference between success and failure. ■

*Hooke is director of inbound services product development at AT&T Bell Laboratories in Holmdel, N.J.*

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## EDITORIAL

# The class issue in open systems must be resolved

Unfortunately, many network managers perceive open systems as something of a class issue. They think only the largest organizations have the technical skills, staff and money to move to open systems.

These users haven't begun migrating to open standards-based systems — in most cases, haven't even begun planning for that move — because they believe that the job is one that only such giants as General Motors Corp. and The Boeing Co. can tackle. Despite all the promise and hoopla surrounding open systems, users continue to invest in proprietary products with limited interoperability.

Further, they don't press vendors for real commitment to open standards. In short, they fail to work today toward a more powerful tomorrow.

That's likely to have wide and adverse consequences because the future of American industry

rests largely on how effectively U.S. companies play the trump card of technology.

The time when a company can gain a significant advantage from a single technology application is waning. In the future, the companies that succeed will be those that have built an open computing infrastructure that supports rapid deployment of new applications.

At the heart of the open systems class issue is a problem of perception. If users perceive that migration is a gargantuan task and that only giant organizations can make the move, those users will not act.

That inaction will hurt U.S. competitiveness as foreign rivals embrace standards-based systems — something that is now occurring rapidly in many countries. In addition, U.S. vendors will continue to move slowly in offering such products.

Users must begin drafting mi-

gration plans and building the business case for an open information architecture.

Proprietary systems today are often more robust than open computing and network tools. But there are steps users can take now — however small — that will put them on the road to open systems.

Open systems groups, such as the Corporation for Open Systems International and the User Alliance for Open Systems, as well as professional groups such as the International Communications Association and the Tele-Communications Association, Inc., must help users develop migration strategies and build business cases.

Through such organizations, open systems leaders can detail their strategies and discuss the problems they've encountered.

The class issue in open systems must be resolved or U.S. competitiveness will suffer. ■

# OPINIONS

## DE FACTO STANDARDS

BY MARY JOHNSTON-TURNER

### Are consortia-driven 'standards' good or bad?

Frustrated by the glacial progress of national and international standards bodies, users and vendors have recently banded together to create de facto industry standards designed to put specific technologies on the fast track to implementation. However, are these de facto standards any more effective than the international efforts they seek to jump start?

The answer to that question lies in how quickly the vendors back up their statements of commitment with product availability, industrywide endorsements and ratification by the appropriate standards committees.

The two most recent attacks on the standards status quo come from the National ISDN 1 program sponsored by the Corporation for Open Systems International (COS) and the frame relay industry specification championed by Cisco Systems, Inc., Digital Equipment Corp., Northern Telecom, Inc. and StrataCom, Inc. National ISDN 1 is based on Bell Communications Research specifications designed to standardize Integrated Services Digital Network interoperability among multiple carriers and customer premises equipment vendors.

Numerous central office vendors such as AT&T, several regional Bell holding companies, computer vendors such as IBM and DEC, as well as the North American ISDN Users' Forum have all endorsed it. Interestingly, MCI Communications Corp. and US Sprint Communications Co., as well as other interexchange carriers, were not part of the announcement and AT&T's involvement was limited to the central office side of its business. Are they waiting to see what happens, or were they pur-

*Johnston-Turner is a principal with Northeast Consulting Resources, Inc., a Boston consulting collaborative specializing in management, communications and information strategies.*

posefully locked out of the specification development?

The goal of the National ISDN 1 effort is to bring various vendor implementations into compliance with one another as quickly as possible so that at least a limited set of functions can be transmitted on an end-to-end basis by late next year. That goal is to be applauded.

The frame relay consortium has much the same goals and motivations. Now endorsed by 36 vendors, the frame relay standard specifies a set of local management interface extensions that can provide a range of

**U**sers should examine "rapid attack" standards before committing to them.

▲▲▲

features and functions. It is an attempt to guarantee interoperability among interexchange carriers, RBHCs and customer premises equipment vendors. But will all the vendors support the full range of extensions. If so, when?

These ad hoc standards programs have sprung up in response to user fears that non-standardized implementations will be orphaned when the standards are ready. They also respond to the industry's desire to get on with the business of implementing new technologies while they are still new.

There is much to argue in favor of getting technologies and interoperable services to market quickly. However, users should examine these "rapid attack" standards before committing to them. For example, how well will they dovetail with international services? What about support from vendors that are not part of these ad hoc groups? Can

the recommendation be referenced in requests for proposal? Is it reasonable to expect all your key vendors to support it?

Furthermore, how deep is your vendor's commitment to the ad hoc standard? For example, many vendors have joined the Open Systems Interconnection bandwagon but have no clear timetable for deployment. Others are moving full steam ahead. Simply citing a commitment to National ISDN 1 doesn't mean much if the product deployment schedule doesn't back it up.

How will you verify conformance with these ad hoc standards? COS, Bellcore or other third-party laboratories may act as certification agents; make sure you can determine whether you are getting a compliant product.

The bottom line for users is still caution. Ad hoc standards endorsed by industry heavy hitters may indeed speed up the deployment of some new technologies. It's likely that some will hit home runs and move the industry forward rapidly. Others may be sideswiped by proprietary interests and bogged down, as would any formal standards proceeding.

Look carefully at the range of vendors participating in the group. If important groups of service or product providers are missing, the specification may be skewed in favor of one group. In that event, the corresponding international standard may go through significant alteration before it's finally approved.

Despite our impatience to get on with new technologies, it will pay to make sure that the new ad hoc standards really are interoperable and that they have wide backing, near-term implementation schedules and a migration path into more formal standards as they become available. If the fast-track standards don't meet some of the tests outlined above, watch out. They may be proprietary solutions in sheep's clothing or, worse yet, vaporware. ☐

**LIKE ALLIGATORS IN A SWAMP**, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

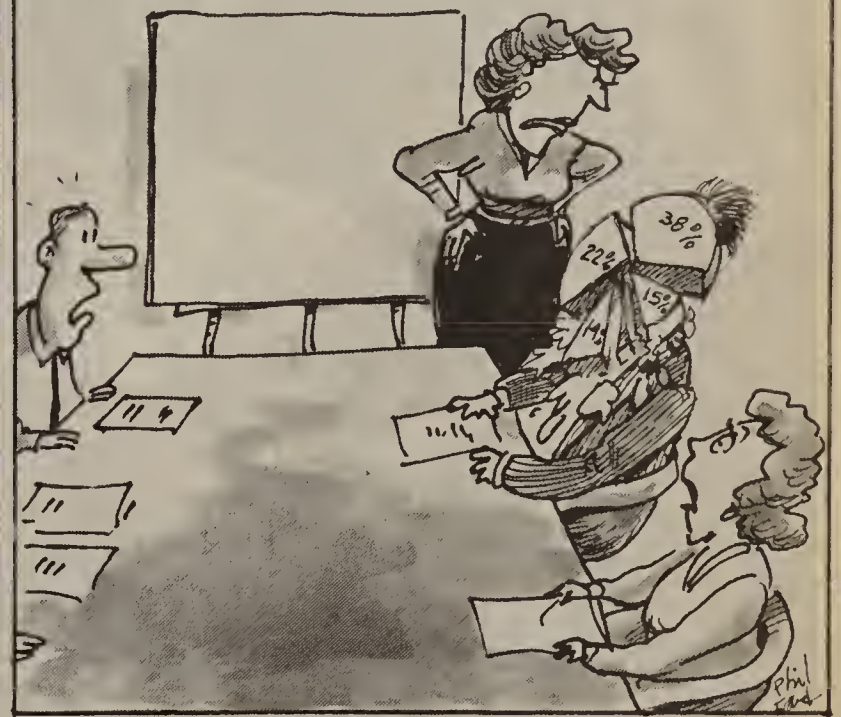
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## TELETOONS

BY FRANK AND TROISE

### The History of Networking Episode 149

Oct. 15, 1984. Net Manager Alice Sternly invents the throwable pie chart at an annual budget meeting.



## LETTERS

### Time to fight back

I'm writing in response to the column about phone service in the country's hotels and motels ("Bates Motel '90: Chocolates but no phone jack," NW, Nov. 19, 1990) and the letter printed in reply to it.

Business travelers should take note: Not only do hospitality facilities lack the ability to connect to a modem, but the hotels and motels are in most cases ripping you off for the communications service they provide.

Almost no one asks at check-in what the hotel charges for a local or long-distance call. The shock comes when you check out. Unfortunately, by then it's too late to do anything about the rape of your expense account or wallet.

In my travels, I have found that there is a broad range in what hotels charge for telecommunications service. The low end has been no charge for local or credit card calls. Toll calls went through for

only a 50-cent surcharge.

On the high end, I have found local calls that cost over \$1 per call per minute. Credit card or collect calls added up to a \$3 charge to the hotel bill.

Added to this would be the long-distance charge if you dialed it direct. The cost of the long-distance call could ultimately be more than twice the cost of what AT&T or another long-distance carrier charges.

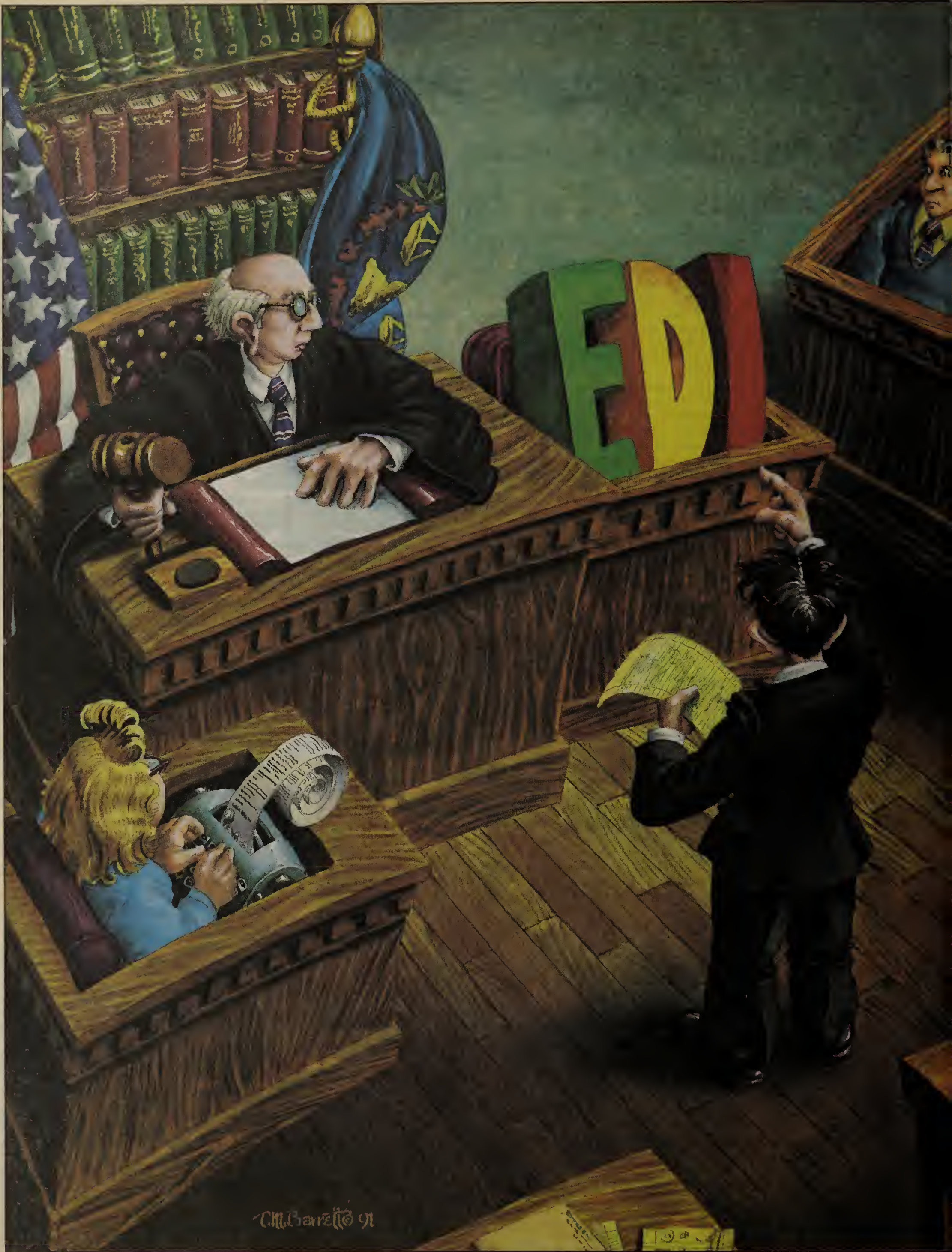
More hotels and motels should look into updating their phone systems. They should look at the rates they charge. I will go to the lobby to use a pay phone before I get ripped off by a high

(continued on page 38)

Network World welcomes letters from its readers.

Letters should be typed and double-spaced. Mail them to Editor, Network World, 161 Worcester Road, Framingham, Mass. 01701.

Letters may be edited for space and clarity.



## Establishing EDI

# EDI's big price tag

CONTINUED FROM PAGE 1

justify because it is far more expensive than many managers imagine.

In addition, there are standards questions to be resolved, including whether the organization should use the U.S. EDI standard, X12, or opt for the still vague international standard, generally known as EDI for Administration, Commerce and Transport (EDIFACT), which has great support in Europe (see Figure 3, page 34).

Despite these problems, EDI has two significant potential benefits: It can improve the efficiency of interorganizational shipments, and it can decrease the number of times documents are processed by human operators.

The first of these benefits has received the most publicity.

Because EDI involves direct entry of an order in a manufacturing company's computer, it can avoid mail and data entry delays and get goods moving faster than with mail-based orders. And such speedy shipments are considered essential for just-in-time manufacturing and just-in-time inventory.

*Salamone is Network World's features writer.*

Just-in-time inventory can bring great financial savings to organizations, such as hospitals and car manufacturers, that previously had to maintain large inventories. By reducing inventory, these organizations can decrease their need to borrow money.

One EDI user that has noted significant inventory reductions is Navistar International Corp. (formerly International Harvester), a truck manufacturer. Eighteen months after launching an EDI program,

Navistar reduced its inventory from a 33-day supply of parts and other goods to a six-day supply, thus cutting the value of its inventory by \$167 million. As of Jan. 31, Navistar's inventory was valued at \$352 million.

Similarly, EDI offers the promise of

reducing paperwork.

Unfortunately, it has not yet lived up to that promise. The vast majority of EDI transactions still involves human data entry at either the goods-ordering or goods-delivering organization.

Some industry analysts estimate that 85% of all received EDI messages still have to be keypunched more than once. For instance, an EDI order received at a manu-  
*(continued on page 34)*

---

**High start-up costs and legal issues slow EDI acceptance**

---



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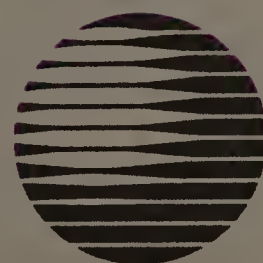


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(continued from page 31)

facturing company might have to be manually reentered into systems such as accounts payable and shipping and receiving.

In other words, one of the great promises of EDI — savings on the cost of data entry staff by eliminating redundant entries — has not yet come to fruition.

business analysis, programming and testing, Colberg says.

He estimates that on average, many large companies that have EDI must convert 10 applications per site, including order entry, manufacturing, shipping and receiving, and accounts payable. According to the costs given by experts for converting applica-

The types of EDI control mechanisms needed can be divided into categories. Authorization control involves verifying the authenticity of the EDI message. It identifies the trading partner and ensures that the transaction was initiated by an authorized person in that company. Generally, authorization control includes identification and logon procedures, as well as built-in codes within the EDI message — all of which verify the trading partner's identity.

The cost for software to perform these tasks is estimated at about \$40,000 for the first year and about \$10,000 for maintenance for each following year, according to analysts at Gartner Group. This cost is per application integrated into an EDI system.

Error checking control is an added expense that also must be included in a cost analysis of EDI. Errors can be introduced in the translation process (from application to EDI and vice versa). The cost of software to check for syntax errors created by this process is about \$8,000 per application.

Further expenses in the authorization process include the operating cost of such systems. This is mostly labor costs to perform EDI system backup and recovery in the event of a system failure. Gartner Group estimates this function totals \$4,500 per year.

One last expense in the authorization control area is the price of what is called completeness. This includes verification that all fields that must be filled are complete and that each EDI message sent is received only once. Indus-

try analysts estimate this process carries a onetime cost of about \$12,000, which includes labor and software.

Once the EDI system is in place, most companies will use a value-added network (VAN) provider to exchange EDI messages with trading partners (see Figure 1, this page).

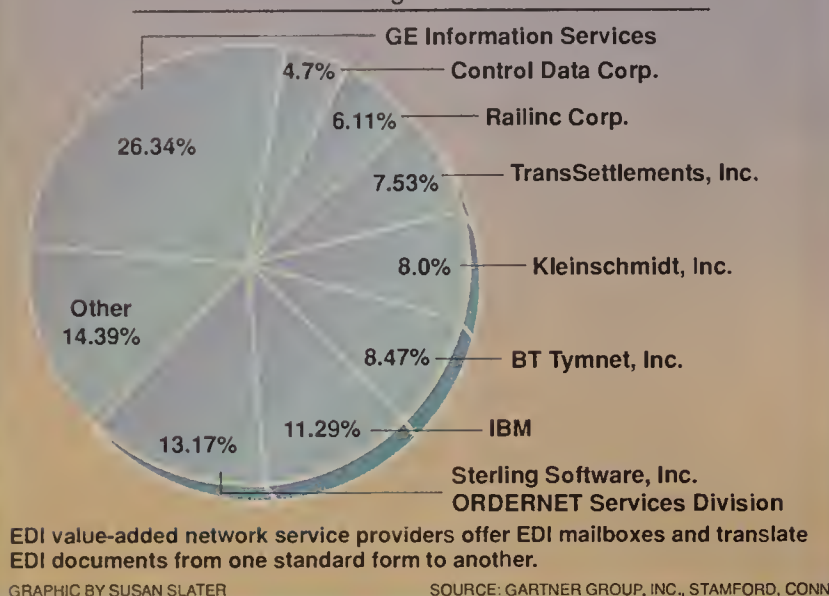
However, there is an exception. If the number of EDI trans-

from a terminal or personal computer.

In the second, which is a more thorough adoption of EDI, a company integrates several different business applications to the EDI system and uses an existing enterprise-wide communications configuration (in most cases, electronic mail) to carry the EDI messages internally to an EDI gateway (often a personal com-

## 1990 EDI net services market

Figure 1



Although EDI still offers many business opportunities, it is turning out to be very expensive. For example, the EDI Consulting Group of Price Waterhouse recently conducted a cost analysis of an EDI configuration that would have linked a manufacturing company to its 12 plants and 120 trading partners.

The cost to implement the system, not including annual transmission expenses, is \$23.5 million. As a result, the client decided to delay and reduce the scope of the EDI project, according to Thomas Colberg, partner-in-charge of the accounting firm's EDI group.

On a somewhat smaller scale, Provigo Distribution, Inc., a Montreal food distributor that processes 325,000 invoices per year, estimates it will cost \$2 million to establish EDI.

The biggest cost for these companies is integrating an application, such as order entry, into an EDI system. The cost for such a conversion is about \$100,000, says Dave Taylor, vice-president and director of interenterprise systems at Gartner Group, Inc., a Stamford, Conn., consultancy.

Most of that amount is for labor. Taylor says it takes about 1,440 hours of custom programming — at a cost of \$50 to \$80 an hour — to integrate a single application into an EDI system.

Taylor's estimated cost to integrate an existing application to EDI is supported by figures from the EDI unit of Price Waterhouse. According to that firm's survey of large EDI users, the typical application integration cost runs about \$134,000 per application. The survey showed that integrating EDI into the operations of a business requires a good deal of customization work, including

tions, this amounts to \$1 million per company site in order to integrate existing applications to EDI.

Costs for installing controls over the EDI applications — to check authorization and messages for errors, for example — must also be factored into a conversion to EDI.

Paper-based business systems have auditing control mechanisms that have been developed over time; EDI does not, and developing the system is likely to be expensive.

## The ABCs of EDI

Figure 3

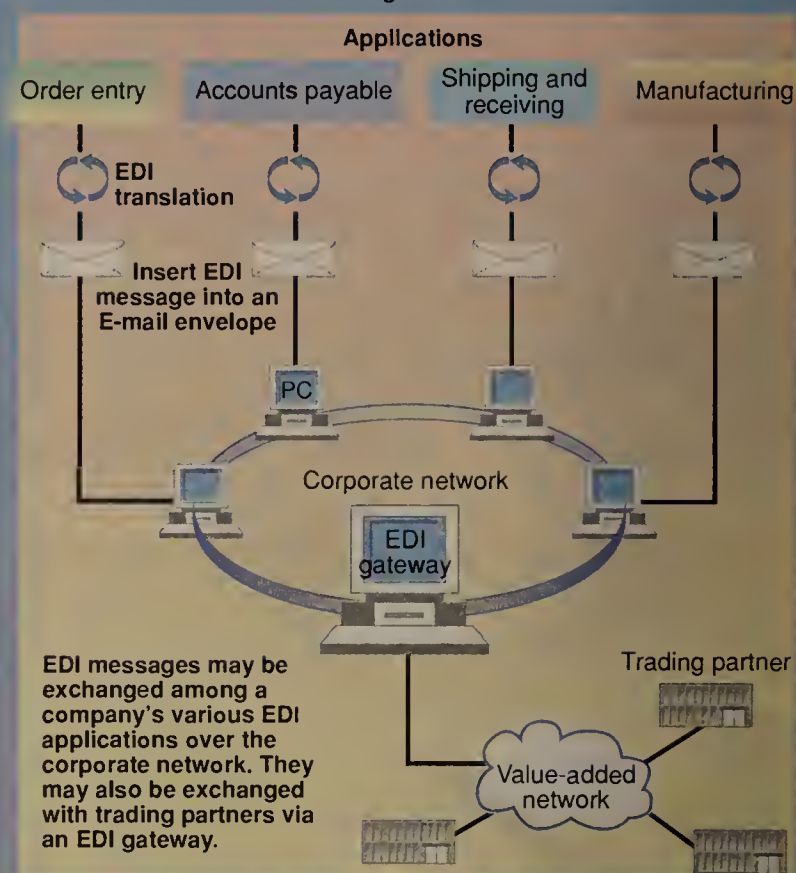
<b>AIAG</b>	Automotive Industry Action Group = Develops EDI standards for the automotive industry.
<b>ANSI</b>	American National Standards Institute
<b>ANSI X12</b>	EDI standard developed in 1979 by ANSI's Accredited Standards Committee (ASC) X12.
<b>CIDX</b>	Chemical Industry Data Exchange = Addresses EDI issues of the chemical industry.
<b>DISA</b>	Data Interchange Standards Organization = An administrative organization of ASC X12 that manages X12 activities.
<b>EDIA</b>	Electronic Data Interchange Association (formerly TDCC)
<b>EDIFACT</b>	EDI for Administration, Commerce and Transport = An international EDI standard effort of the United Nations.
<b>EFT</b>	Electronic funds transfer = Electronic payments via EDI.
<b>PIDX</b>	Petroleum Industry Data Exchange = Addresses EDI issues of the petroleum industry.
<b>TDCC</b>	Transportation Data Coordinating Committee = An organization (now EDIA) and an early EDI standard for the transportation industry.
<b>UCS</b>	Uniform Communications Standard = An EDI standard developed by the UCS Committee for the grocery industry.
<b>VICS</b>	Voluntary Interindustry Communications Standard = A set of ANSI X12 standards used by the apparel industry.
<b>WINS</b>	Warehouse Information Network Standard = An EDI standard for the warehouse industry developed by the International Association of Refrigerated Warehouses and the American Warehousemen's Association.
<b>X.435</b>	International standard for sending EDI over X.400 (scheduled to be completed by the end of 1992).

GRAPHIC BY SUSAN SLATER

SOURCE: NETWORK WORLD

## Integrating EDI over E-mail

Figure 2



Users seeking to integrate EDI into existing corporate communications systems are choosing E-mail as the electronic envelope that carries EDI messages.

GRAPHIC BY SUSAN SLATER

SOURCE: NETWORK WORLD

actions with one trading partner exceeds about 250,000 per month, it is more economical to establish a dedicated link — a leased line, for example — rather than using the VAN, according to Taylor.

Other than that exception, using VANs is the best choice for most EDI setups, he says.

But determining the pricing of VAN services is particularly difficult. These services are not tariffed, and most vendors avoid standard price lists, asserting that there are so many service options that each user's service arrangement is, in essence, customized.

A typical example of a company with a large EDI implementation is Haworth, Inc., a Michigan-based office furniture store, which spends \$250,000 per year for the communications costs involved in sending EDI orders to 300 dealers.

### Establishing EDI

If EDI is still of interest despite its costs and uncertainties, experts say there are two basic approaches to bringing it into an organization.

In the first, a single application — such as order entry — is converted to EDI. The EDI message is exchanged with a trading partner by dialing out to a VAN

puter and modem) that connects to a VAN.

The single-application approach requires EDI translation software, which takes the data from an application (order entry, for example) and translates it into EDI format. Typically, this translation process runs on a per-

**A** typical company with EDI spends about \$250,000 per year to send EDI orders to 300 dealers.

▲▲▲

sonal computer.

In full-blown integration, each application (order entry and shipping and receiving, for example) is reengineered so that the output of the host, or whatever platform the organization typically uses, is in EDI format.

Many companies are considering (continued on page 37)

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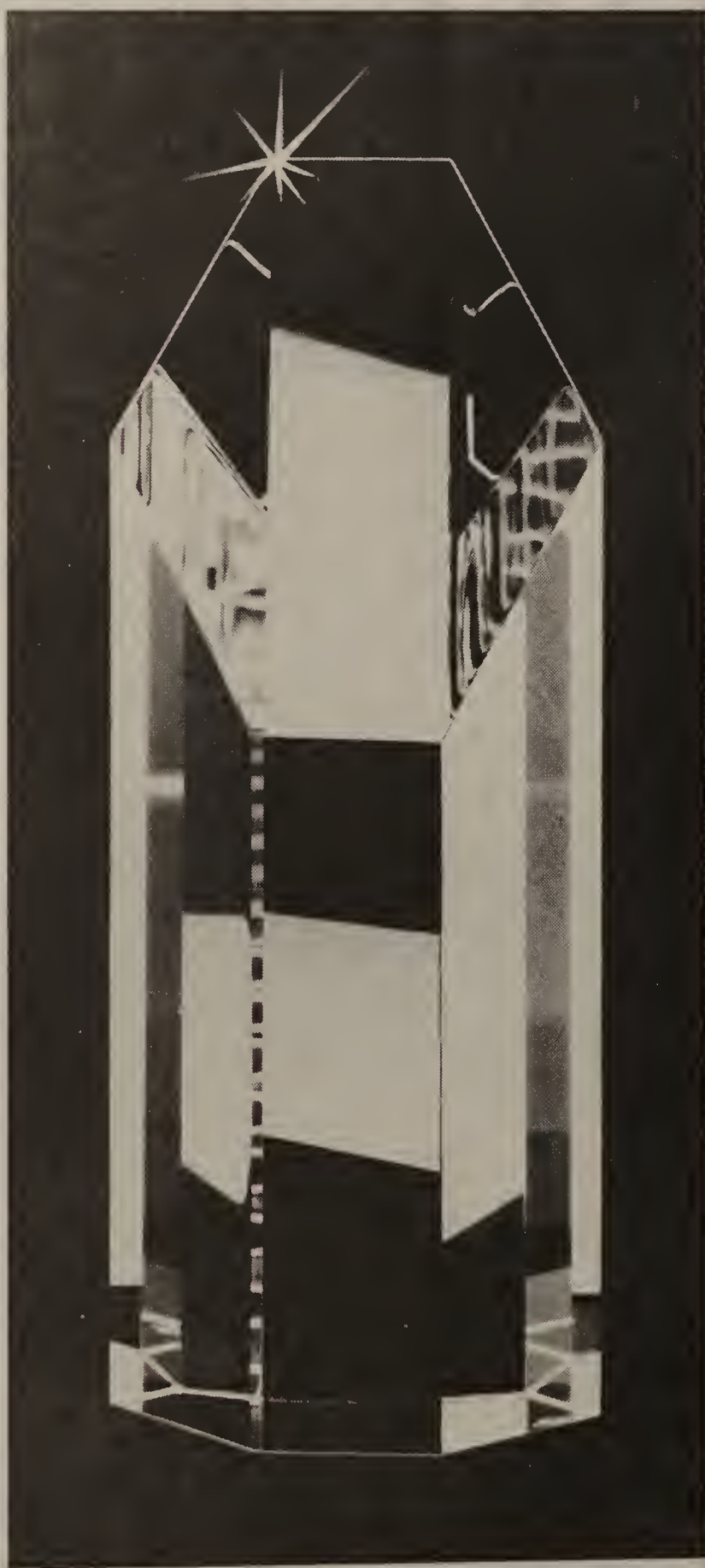
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(continued from page 34)

ing using their existing E-mail systems to carry EDI messages within the organization. There is, however, this caveat: Each verti-

cal industry uses a set of EDI formats specific to that industry. So while one unit of a company may run EDI under one industry-standard format, another might use a

different one.

Choosing between the single-application and broad approach to EDI depends largely on the organization's situation, experts

## Legal advice for EDI users

Disputes among trading partners have been known to cause one party to take legal action, even when the companies have paper copies of the transactions that have occurred between them.

Electronic data interchange messages are far more flexible — hence, changeable — than paper. And they're not signed. Therefore, companies clearly

be proven that the EDI message came from the sender and was not altered after it was transmitted, Wright says.

To avoid disputes over changes to orders or bills, many recent EDI agreements rely on trusted third parties to both transmit and validate messages. For example, the value-added network (VAN) provider would store a copy of the message, re-

lish an audit system for tracking and storing EDI records.

The company might also impose technical controls that could reduce the chances of internal record tampering. For instance, the record keeper might be denied software and training necessary to make changes to EDI records or they might be stored on a nonerasable optical disk.

Although EDI has great potential, its use in international transactions faces certain legal barriers.

"There are about a dozen international trading partner agreements," Wright says. In an attempt to tackle the issue of liability according to their own laws, each country has drafted its own version of a trading partner agreement.

The method used to establish liability for losses incurred in faulty EDI transmissions is one major difference among trading partner agreements drafted by different countries. An example of the questions that might arise: Say that a third-party network breaks down and an EDI message doesn't get through. Who is responsible for losses if that causes a factory to shut down because it didn't get its parts on time?

In keeping with U.S. laws on liability, which state that the party at fault pays the damages, most trading partner agreements in this country specify that the VAN is responsible for losses if the net fails. However, the laws covering liability in the U.K. are different from those in

**"One legal question is how to prove an EDI message's origin and content."**

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should take legal precautions before implementing EDI in their business transactions.

Legal experts say special contracts, called trading partner agreements, must be negotiated and signed before firms can conduct business via EDI. "If you don't have a trading partner agreement, you don't have EDI," says Winston Stein, EDI coordinator at Houston Lighting & Power.

The trading partner agreement should specify liability issues, security and control of EDI messages, and the communications procedures to be used, says Benjamin Wright, a Dallas attorney and author of *EDI and American Law: A Practical Guide*.

An EDI message cannot be signed in quite the same way as a paper transaction — that is, a handwritten name cannot be affixed to it. Therefore, Wright says, the trading partner agreement should spell out what the partners consider a "signed" EDI document.

There are acceptable electronic substitutes for a handwritten signature, such as transmitting secret codes or incorporating passwords into the message. However, before using one of these substitutes, Wright says, the two parties should agree on the electronic signature format because the law has not yet come up with a good, strict legal definition of a signed electronic document.

"One legal question raised by EDI is how to amass enough evidence to prove a message's origin and content in court," he says. For an EDI message to be considered legally valid, it must

be proven that the EDI message came from the sender and was not altered after it was transmitted, Wright says.

This solves the authenticity problem but opens up other legal issues. For example, the government can get access to those stored records more easily if the VAN has them than if they were stored on the user's premises.

Another problem involves control of the records. If your VAN goes out of business, how do you get your records back? And what precautions are taken to ensure that records are preserved in the case of a disaster? In short, by using a third party, a firm loses some control over its EDI records.

There are, however, ways around these problems. Wright is an advocate of the "internal

**Although EDI has potential, its international use faces legal barriers.**

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record keeper" concept. This allows companies to authenticate their own EDI records.

To accomplish that, the company can segregate the duties of the internal record keeper from the group that receives the message.

For example, if customers are sending EDI purchase orders to a company's sales department, the telecommunications department might be designated as the trusted record keeper. The record keeper would have to estab-

lish an audit system for tracking and storing EDI records.

Under the U.K.'s proposed Standard for Interchange Agreement, drafted by the Legal Advisory Group of the EDI Association of the U.K., a company instructing a trading partner agreement to use a particular VAN would be liable for losses if the VAN made a mistake, says Ian Walden, editor of *EDI and the Law*, published by Blenheim Online Publications of London.

— Salvatore Salamone

say. The single-application approach offers a quick, relatively inexpensive way for a company to enter the EDI arena. On the other hand, the full-integration method requires a large investment up front.

Both options have their backers, however. The single-application approach involves a relatively modest investment but offers only modest potential savings.

"We're talking about a front-end interface to a minicomputer or mainframe," says Michael Eckstein, executive operating officer at EDI Able, Inc., a Malvern, Pa.-based systems integrator that specializes in EDI applications.

Typically, an installed single-application EDI system requires an Intel Corp. 80386- or 80486-based personal computer running EDI translation software that maps data from the application to an EDI data structure, he says.

"Then all you need is a modem and a communications package to dial out to a VAN and for about \$5,000 total, you're doing EDI," Eckstein says. For this level of EDI involvement, industry analysts typically cite cost savings that range from \$5 to \$10 per transaction over a paper-based system.

Naturally, a broader approach to EDI will cost more. But its potential benefits are also higher.

By integrating many departments into one EDI system, companies typically realize additional hard-to-quantify savings by reducing redundant information entry.

For example, in a paper-based system, information from a purchase order may be entered several times as the order is processed. With EDI, the information needs to be entered only once, although, as noted, many firms have not yet been able to achieve this.

### Choosing standards

Before an application is reengineered to work in an EDI system, the network manager must decide which EDI format will be used. In North America, the dominant standard is ANSI X12.

Globally, EDIFACT, the United Nations-sponsored EDI standard, is gaining widespread support. For example, the European Community as well as many Pacific Rim countries — Australia, Hong Kong, New Zealand and Singapore — have adopted EDIFACT as their EDI standard.

"EDIFACT will eventually become the global standard," says Ken Zita, a principal at Network Dynamics, a New York research and consulting firm specializing in international telecommunications.

However, Zita points out that EDIFACT exists mostly on paper at this point.

ANSI X12, on the other hand, offers users existing standards for many vertical-industry EDI

applications. Because of this, implementation of EDI is further along in the U.S. than in other countries, Zita says. And while many Pacific Rim countries have adopted EDIFACT as their EDI standard, he notes that ANSI X12 is widely used in those countries.

A network manager in the U.S. trying to decide which standard is best should adopt ANSI X12 because its implementations exist today and it is the most widely used form of EDI in North America.

Network managers must also decide how to send EDI messages to trading partners and to other departments within their own company.

Many firms have opted to send EDI over their existing E-mail systems and to use E-mail services offered by VANs to exchange the information with trading partners.

Conceptually, this works by enclosing the EDI message in an electronic envelope to send out over the network (see Figure 2, page 34).

The Consultative Committee on International Telephony and Telegraphy currently has an international standards effort under way to define this process. When completed, the standard, called X.435, will specify how to use X.400 for EDI transport.

This standards process is not expected to be finished until the end of 1992. Yet users anticipate its benefits. For example, using X.400 to exchange EDI messages will allow users to tap the benefits of X.500 directory services to route messages as such services become available.

Despite its many problems, EDI also offers users many benefits. When there is a critical mass of EDI transactions being conducted with an organization's major suppliers or customers, the enterprise is likely to benefit either from the efficiencies of EDI or in a business sense. An example of the latter is the pharmaceutical company Baxter Healthcare Corp., which used its close ties with the hospitals to which it supplies EDI workstations.

Of course, to ensure efficiencies, managers must take charge of the project to make certain that redundant data entry is eliminated. This may not be possible immediately because paper-based orders are likely to continue, but reduction of redundant data entry should be a set goal.

Despite much discussion about EDI in recent years, the approach is clearly still in its infancy. A market study conducted by First Interstate Bank of California in Los Angeles last year found that more than half of the Fortune 1,000 companies use EDI and that this number is increasing rapidly. However, it isn't clear whether EDI is used extensively in these firms or only in isolated cases.

(continued on page 38)

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However, EDI is certainly having a significant effect on the way some companies do business. For example, LTV Steel Company, Inc. used to deliver truck loads of steel on a weekly basis to its auto manufacturing customers. It now delivers supplies of steel daily and, in some cases, on a four-hour basis.

"We could not do this without EDI," says Diane Mueller, assistant group counsel at LTV Steel.

Despite its many problems, EDI is a trend that network managers would do well to follow. Implementing EDI is clearly a case where a net manager would receive an opportunity to combine technical skills with financial and business acumen. ■

## Internal EDI helps sales

Companies that use electronic data interchange to exchange information with trading partners cite improved efficiency and faster processing of documents as key reasons for using the technology.

Now some companies have started to reap similar savings internally by setting up EDI systems that their traveling sales forces can use.

Many sales representatives already use laptop computers, modems and sales automation software. Typically, a salesperson will enter an order into the laptop comput-

er at the client's office and later download the order to a corporate computer using a modem.

Most of these transactions are not EDI, however. They are often fully electronic: The salesperson sends an electronic order form to the corporate mainframe or minicomputer, where the information is imported into the order entry application. These transactions do not use any of the EDI standards such as ANSI X12 or EDI for Administration, Commerce and Transport (EDIFACT).

Furthermore, the traditional definition of EDI limits it to exchanging business forms among different companies. But that strict interpretation seems to be breaking down because some companies are switching to full internal EDI applications.

For instance, Minneapolis-based Pillsbury Co., whose sales representatives use a combination of electronic mail and EDI, reports that because of EDI, its sales staff's productivity increased 20% in 1990.

Bruce Donlin, electronic information exchange team leader for Pillsbury, presented these figures at the Electronic Messaging Association's Electronic Messaging '90 conference last December in San Francisco. Pillsbury uses EDI to process orders, ship products, control inventories and receive payments, he said.

"Pillsbury's goal is to receive and distribute information electronically wherever possible, eliminating human intervention, which leads to delays and errors in processing," Donlin said at the conference.

Pillsbury's on-the-road process starts with the sales representative entering an order on the laptop computer. The order is attached to an E-mail message and can be transmitted to Minneapolis whenever the sales representative has access to a phone. The order entered by the traveling salesperson is automatically pulled off the E-mail system and translated into EDI format on the company's IBM 3090 computer.

Once the order is translated and entered into the order processing system, the company's Headquarters Inventory Control (HQIC) system is updated and an EDI notice to ship is automatically sent to a plant, distribution center or public warehouse.

Once the notice is received, that location acknowledges the order and sends an EDI notice of shipment to Minneapolis. There, the HQIC system is updated and an invoice is generated. The warehouse sends an EDI notice of shipment to a transportation company, and the cargo carrier sends a notice of delivery to Minneapolis.

The system then matches the notice to ship with the notice of delivery and approves an EDI/electronic funds transfer payment to the carrier's accounts receivable department. According to Donlin, "Once the order is entered, it is processed without human intervention."

— Salvatore Salamone

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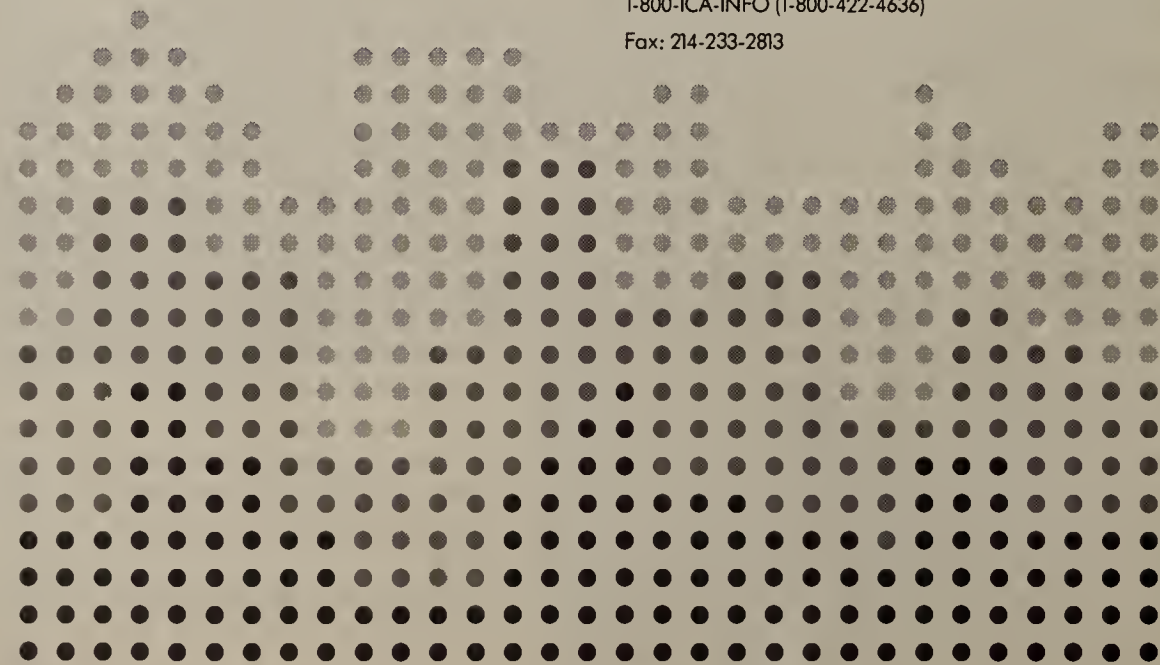
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## Letters

continued from page 29

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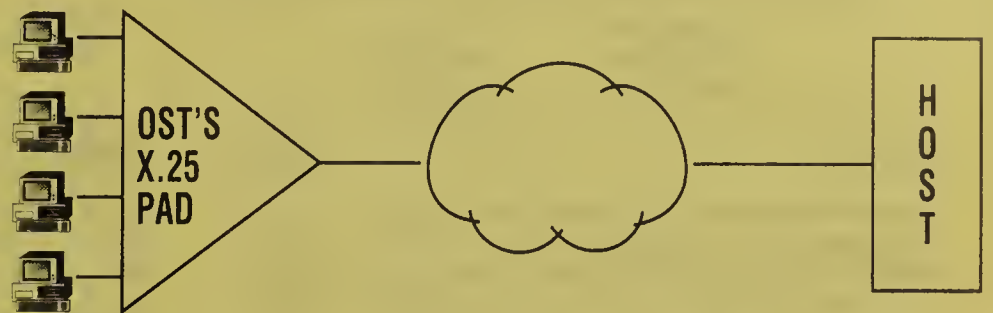
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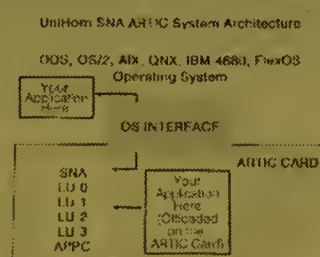
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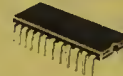
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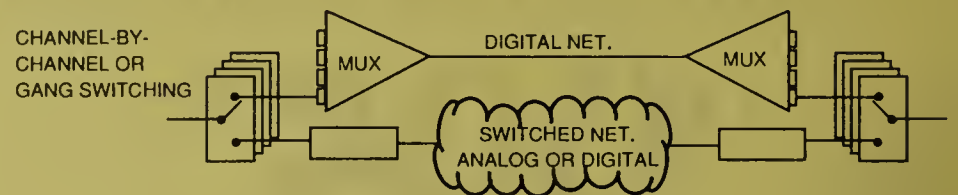
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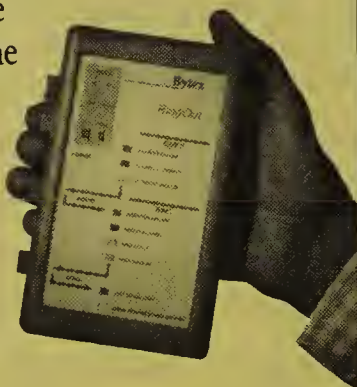
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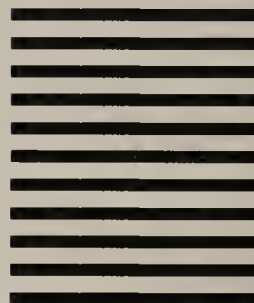
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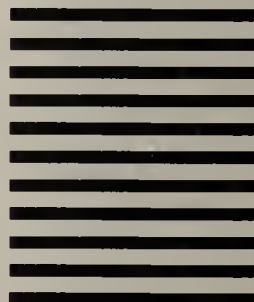
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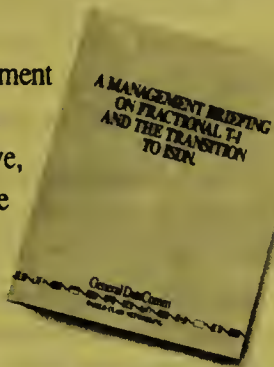
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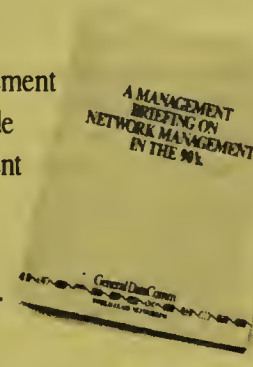
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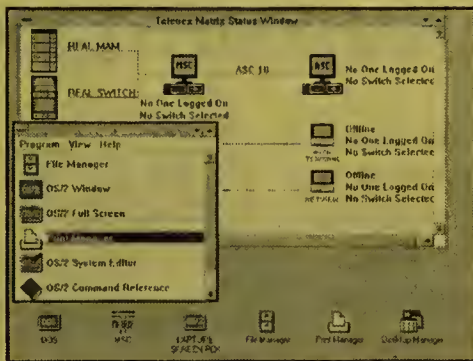
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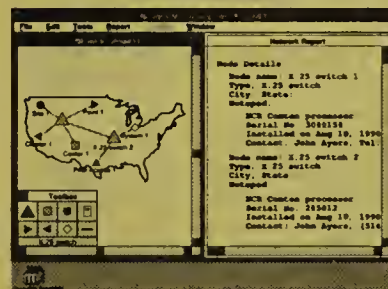
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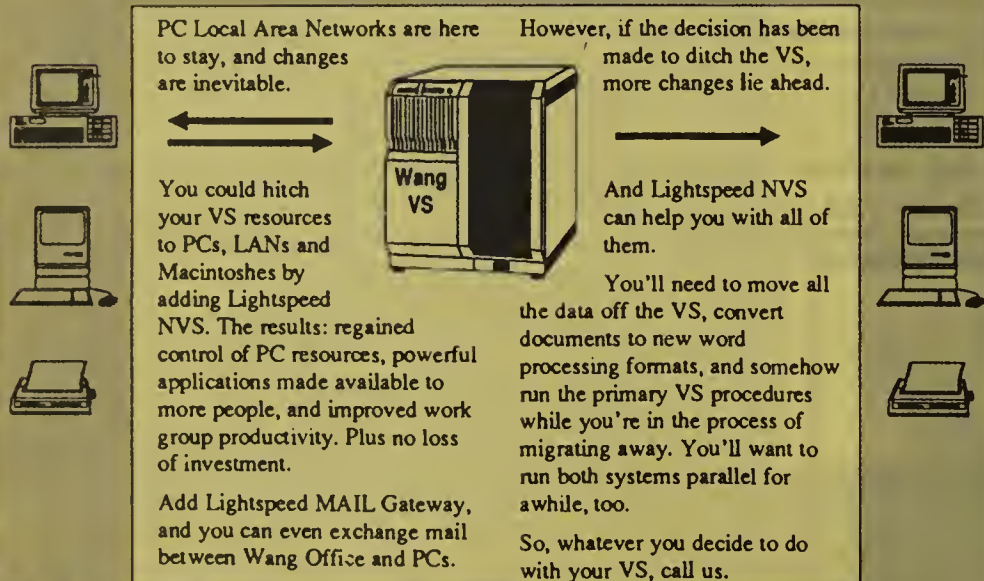
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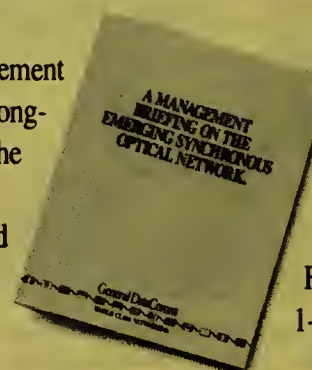
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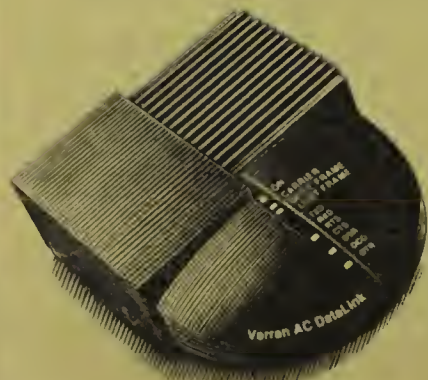
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# NETWORKING MARKETPLACE

## Network World Second Quarter 1991 Editorial Features

- April 1  
Trends Reshaping Networks: EDI
- April 8  
Buyer's Guide: LAN operating systems
- April 15  
Standards update
- April 22  
Buyer's Guide: Interexchange carrier digital private-line services
- April 29  
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- May 6  
Buyer's Guide: X.25 packet switches  
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- May 13  
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- May 20  
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1. Buyer's Guide: Bridges/routers  
2. Survey: Critical issues facing users  
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- July 15  
1. Moving to OS/2: How, when, why?  
2. Network management update  
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*Special: Lead Service*
- July 22  
LAN management update
- July 29  
Technology Trends: Packet networks of the future
- August 5  
Focus on applications architectures
- August 12  
Buyer's Guide: Virtual network services  
*Show Distribution: DCI/NW Mfg. Nets*
- August 19  
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All rates for listings are sold on a 26-week basis and are net priced for that period. A line listing is company name and telephone number.

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Space and copy closing for next updated issue is March 21. Listing begins in April 15 issue and runs through the October 7, 1991 issue.

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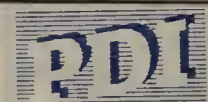
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### 1 Industry: (check one only)

- 01. ☐ Manufacturers (other than computer/communications)
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- 21. ☐ VAR/VAD/Systems House
- 22. ☐ Distributor, Computer Related
- 23. ☐ Distributor, Communications Related
- 24. ☐ Other .....

### 2 Job function: (check one only)

- 1. ☐ Networking Management (Responsible for both voice & data)
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- 5. ☐ Telecommunications Management (Responsible for voice only)
- 6. ☐ Financial Management
- 7. ☐ Engineering Management
- 8. ☐ Consultant (Independent)
- 9. ☐ Other .....

### 3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

- 1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
- 2. ☐ Multi Enterprise (Consultants)
- 3. ☐ Department Wide

### 4 What is the total number of sites for which you have purchase influence?

- 1. ☐ 100+
- 2. ☐ 50-99
- 3. ☐ 20-49
- 4. ☐ 10-19
- 5. ☐ 2-9
- 6. ☐ 1

### 5 Your primary responsibility: (check one only)

- 1. ☐ Both Data + Voice
- 2. ☐ Data Networking Only
- 3. ☐ Voice Networking Only
- 4. ☐ None

### 6 Which transmission media do you use in your network: (check all that apply)

- Public:
- 01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
- 02. ☐ Leased Line (not including T-1)
- 03. ☐ T-1
- 04. ☐ Fractional T-1
- 05. ☐ T-3/SONET
- Private:
- 06. ☐ Broadband
- 07. ☐ ISDN
- 08. ☐ Satellite
- 09. ☐ Microwave
- 10. ☐ Fiber Optic

### 7 Is your network: (check all that apply)

- LOCAL AREA NETWORK
- 1. ☐ Local (within building)
- 2. ☐ Local (in a campus environment)
- WIDE AREA NETWORKS
- 3. ☐ International
- 4. ☐ National
- 5. ☐ Regional (several states)
- 6. ☐ Metropolitan

### 8 What is your network architecture? (check all that apply)

- 1. ☐ SNA
- 2. ☐ DECNET
- 3. ☐ OSI
- 4. ☐ GOSIP
- 5. ☐ MAP/TOP
- 6. ☐ TCP/IP
- 7. ☐ DCA (UNISYS)
- 8. ☐ OTHER .....

### 9 What is your LAN Operating System? (check all that apply)

- 01. ☐ 3COM (3+, 3+ open)
- 02. ☐ LOCAL TALK (APPLETALK)
- 03. ☐ BANYAN (VINES)
- 04. ☐ DCA (IRMALAN)
- 05. ☐ IBM (LAN Server)
- 06. ☐ IBM (PC LAN PROGRAM)
- 07. ☐ MICROSOFT (LAN MANAGER)
- 08. ☐ UNGERMAN BASS (NET/1)
- 09. ☐ NOVELL (NETWARE)
- 10. ☐ TOPS
- 11. ☐ PROTEON (PRONET)
- 12. ☐ OTHER .....

### 10 What is your LAN environment? (check all that apply)

- 1. ☐ 4M TOKEN RING
- 2. ☐ 16M TOKEN RING
- 3. ☐ ARCNET
- 4. ☐ ETHERNET
- 5. ☐ STARLAN
- 6. ☐ FDDI
- 7. ☐ LOCALTALK
- 8. ☐ 10BASET
- 9. ☐ OTHER .....

### 11 Which operating systems do you utilize? (check all that apply)

- 1. ☐ IBM DOS (VSE)
- 2. ☐ UNIX
- 3. ☐ OS/2
- 4. ☐ OS/2 Extended Edition
- 5. ☐ MVS
- 6. ☐ VM
- 7. ☐ VMS
- 8. ☐ XENIX
- 9. ☐ PICK
- 0. ☐ OTHER .....

### 12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES	MINIS
	A	B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

### 13 Please indicate by vendor the number of microcomputers/workstations:

- A. Presently installed in your network.
- B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED	PLAN TO INSTALL NEXT 12 MONTHS
	A	B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

### 14 What is your planned PC standard? (check all that apply)

- 1. ☐ EISA
- 2. ☐ MCA
- 3. ☐ NUBUS (MACINTOSH)

### 15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

- 1. ☐ Europe
- 2. ☐ Asia
- 3. ☐ South America
- 4. ☐ Australia
- 5. ☐ Middle East

### 16 Check ALL that apply in columns A and B

- A) I am presently involved in the purchase process for the following products/services:
- B) I plan to purchase the following products/services in the next 12 months:

Presently Involved	Plan to Purchase
A	B
LOCAL AREA NETWORKS:	
01. <input type="checkbox"/>	<input type="checkbox"/> Local Area Networks
02. <input type="checkbox"/>	<input type="checkbox"/> LAN Servers
03. <input type="checkbox"/>	<input type="checkbox"/> LAN Services
04. <input type="checkbox"/>	<input type="checkbox"/> Cables, Connectors, Baluns
05. <input type="checkbox"/>	<input type="checkbox"/> Bridges, Routers, Gateways
06. <input type="checkbox"/>	<input type="checkbox"/> UPS
07. <input type="checkbox"/>	<input type="checkbox"/> LAN Storage Devices
COMPUTERS/PERIPHERALS:	
08. <input type="checkbox"/>	<input type="checkbox"/> Micros
09. <input type="checkbox"/>	<input type="checkbox"/> Minis
10. <input type="checkbox"/>	<input type="checkbox"/> Mainframes
11. <input type="checkbox"/>	<input type="checkbox"/> Front End Processors
12. <input type="checkbox"/>	<input type="checkbox"/> Terminals
13. <input type="checkbox"/>	<input type="checkbox"/> Laptops
14. <input type="checkbox"/>	<input type="checkbox"/> Printers
15. <input type="checkbox"/>	<input type="checkbox"/> Work Stations
16. <input type="checkbox"/>	<input type="checkbox"/> Cluster Controllers

Presently Involved	Plan to Purchase
A	B
SOFTWARE:	
17. <input type="checkbox"/>	<input type="checkbox"/> Network Management
18. <input type="checkbox"/>	<input type="checkbox"/> Micro to Mainframe
19. <input type="checkbox"/>	<input type="checkbox"/> Network Security
20. <input type="checkbox"/>	<input type="checkbox"/> Call Accounting
21. <input type="checkbox"/>	<input type="checkbox"/> Distributed DBMS
22. <input type="checkbox"/>	<input type="checkbox"/> Communications Software
23. <input type="checkbox"/>	<input type="checkbox"/> Applications Software
24. <input type="checkbox"/>	<input type="checkbox"/> Network Operating Systems Software
25. <input type="checkbox"/>	<input type="checkbox"/> EDI Software
26. <input type="checkbox"/>	<input type="checkbox"/> E-Mail Software
DATA COMMUNICATIONS:	
27. <input type="checkbox"/>	<input type="checkbox"/> Modems (over 9.6kbps)
28. <input type="checkbox"/>	<input type="checkbox"/> Modems (under 9.6kbps)
29. <input type="checkbox"/>	<input type="checkbox"/> T-1 Multiplexers
30. <input type="checkbox"/>	<input type="checkbox"/> T-3 Multiplexers
31. <input type="checkbox"/>	<input type="checkbox"/> Fractional T-1 Multiplexers
32. <input type="checkbox"/>	<input type="checkbox"/> Data Switches
33. <input type="checkbox"/>	<input type="checkbox"/> Matrix Switches
34. <input type="checkbox"/>	<input type="checkbox"/> Packet Switches
35. <input type="checkbox"/>	<input type="checkbox"/> Protocol Converters
36. <input type="checkbox"/>	<input type="checkbox"/> Network Management Systems
37. <input type="checkbox"/>	<input type="checkbox"/> Terminal Emulation Boards
38. <input type="checkbox"/>	<input type="checkbox"/> Facsimile Machines
39. <input type="checkbox"/>	<input type="checkbox"/> Diagnostic Test Equipment
40. <input type="checkbox"/>	<input type="checkbox"/> DSU/CSU
41. <input type="checkbox"/>	<input type="checkbox"/> Data Security
42. <input type="checkbox"/>	<input type="checkbox"/> Data Compression Equipment
43. <input type="checkbox"/>	<input type="checkbox"/> Network Adapter Boards
44. <input type="checkbox"/>	<input type="checkbox"/> Microwave
45. <input type="checkbox"/>	<input type="checkbox"/> Messaging Software
TELECOMMUNICATIONS:	
46. <input type="checkbox"/>	<input type="checkbox"/> PBXs (over 1000 lines)
47. <input type="checkbox"/>	<input type="checkbox"/> PBXs (200 - 1000 lines)
48. <input type="checkbox"/>	<input type="checkbox"/> PBXs (under 200 lines)
49. <input type="checkbox"/>	<input type="checkbox"/> Key Systems
50. <input type="checkbox"/>	<input type="checkbox"/> Automatic Call Distributors
51. <input type="checkbox"/>	<input type="checkbox"/> Voice Messaging Systems
52. <input type="checkbox"/>	<input type="checkbox"/> Video Teleconferencing Systems
SERVICES:	
53. <input type="checkbox"/>	<input type="checkbox"/> Switched Voice
54. <input type="checkbox"/>	<input type="checkbox"/> Dedicated Leased Line
55. <input type="checkbox"/>	<input type="checkbox"/> T-1
56. <input type="checkbox"/>	<input type="checkbox"/> T-3
57. <input type="checkbox"/>	<input type="checkbox"/> Digital Data
58. <input type="checkbox"/>	<input type="checkbox"/> Packet Switched
59. <input type="checkbox"/>	<input type="checkbox"/> Centrex
60. <input type="checkbox"/>	<input type="checkbox"/> Central Office Lan
61. <input type="checkbox"/>	<input type="checkbox"/> Satellite
62. <input type="checkbox"/>	<input type="checkbox"/> On-Line Information
63. <input type="checkbox"/>	<input type="checkbox"/> ISDN
64. <input type="checkbox"/>	<input type="checkbox"/> EMail
65. <input type="checkbox"/>	<input type="checkbox"/> VSAT

### 17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plan to help specify, recommend or approve in the next 12 months?

- | A                           | B   |
|-----------------------------|---|
| 1. <input type="checkbox"/> | <input type="checkbox"/> \$100 million and over |
| 2. <input type="checkbox"/> | <input type="checkbox"/> \$50 - \$99.9 mill     |
| 3. <input type="checkbox"/> | <input type="checkbox"/> \$25 - \$49.9 mill     |
| 4. <input type="checkbox"/> | <input type="checkbox"/> \$20 - \$24.9 mill.    |
| 5. <input type="checkbox"/> | <input type="checkbox"/> \$10 - \$19.9 mill.    |
| 6. <input type="checkbox"/> | <input type="checkbox"/> \$5 - \$9.9 mill.      |
| 7. <input type="checkbox"/> | <input type="checkbox"/> \$1 - \$4.9 mill.      |
| 8. <input type="checkbox"/> | <input type="checkbox"/> \$500,000 - \$999,999  |
| 9. <input type="checkbox"/> | <input type="checkbox"/> Under \$500,000        |

### 18 Estimated gross annual revenue of your entire company/institution: (check one only)

- 1. ☐ over \$10 billion
- 2. ☐ \$1 to \$9.9 bill.
- 3. ☐ \$500 to \$1 bill.
- 4. ☐ \$100 to \$499.9 mill.
- 5. ☐ \$50 to \$99.9 mill.
- 6. ☐ \$10 to \$49.9 mill.
- 7. ☐ \$5 to 9.9 mill.
- 8. ☐ under \$5 mill.

### 19 Estimated number of employees for your entire corporation:

- 1. ☐ over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4. ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ under 500

### 20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

- 1. ☐ Basic Rate Interface Terminal Adapters
- 2. ☐ Primary Rate Interface Equipment
- 3. ☐ Voice/Data terminals
- 4. ☐ Voice-only terminals
- 5. ☐ Data-only terminals

### 21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A	B
PBX	COS
A <input type="checkbox"/>	<input type="checkbox"/> AT&T
B <input type="checkbox"/>	<input type="checkbox"/> ALCATEL
C <input type="checkbox"/>	<input type="checkbox"/> ERICSSON
D <input type="checkbox"/>	<input type="checkbox"/> FUJITSU
E <input type="checkbox"/>	<input type="checkbox"/> HARRIS
F <input type="checkbox"/>	<input type="checkbox"/> HITACHI
G <input type="checkbox"/>	<input type="checkbox"/> ROLM
H <input type="checkbox"/>	<input type="checkbox"/> INTECOM
I <input type="checkbox"/>	<input type="checkbox"/> MEMOREX TELEX
J <input type="checkbox"/>	<input type="checkbox"/> MITEL
K <input type="checkbox"/>	<input type="checkbox"/> NEC
L <input type="checkbox"/>	<input type="checkbox"/> NORTHERN TELECOM
M <input type="checkbox"/>	<input type="checkbox"/> SAMSUNG
N <input type="checkbox"/>	<input type="checkbox"/> SIEMENS
O <input type="checkbox"/>	<input type="checkbox"/> STROMBERG-CARLSON
P <input type="checkbox"/>	<input type="checkbox"/> TOSHIBA
Q <input type="checkbox"/>	<input type="checkbox"/> OTHER .....

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(continued on next column)

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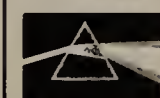
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April 1

Trends Reshaping Networks: EDI

April 8

Buyer's Guide: LAN operating systems

April 15

Standards update

April 22

Buyer's Guide: Interexchange carrier digital private-line services

April 29

Twisted-pair networks

May 6

Buyer's Guide: X.25 packet switches  
Show Distribution: Dexpo South  
Special: Harvey

May 13

Trends Reshaping Networks: Security  
Show Distribution: GlobalNet  
Special: Lead Service

May 20

Virtual networks update

May 27

SNA Update

June 3

1. Buyer's Guide: Bridges/routers  
2. Survey: Critical issues facing users  
Show Distribution: ICA  
Special: Lead Service

## GSA tries to justify handling

*continued from page 13*

years. The GSA estimates that the federal government is saving \$178 million annually with FTS 2000. But FTS 2000 has been plagued by controversy and delays since it was first proposed.

Numerous contract protests, congressional inquiries and a Federal Bureau of Investigation review of possible bid leaks have resulted.

Although the bulk of previous legal challenges were largely the result of vendors jockeying for advantage in the bidding process, the recent challenges raise fundamental questions about the GSA's ability to manage the contract properly.

In AT&T's complaint filed in February, the carrier claimed that the GSA improperly assigned the U.S. Navy and Marine Corps to US Sprint's FTS 2000 network after secret negotiations.

AT&T complained not only that the GSA conducted improper negotiations with US Sprint, but also that the assignment further exacerbates an imbalance between the two networks that results in government users being overcharged.

AT&T claims that the GSA is violating the intent of FTS 2000 by allowing too much traffic to go to US Sprint's network. When the FTS 2000 contract was awarded in December 1988, AT&T won 60% of the business and US Sprint received 40%. But since then, the split has been reversed and US Sprint is receiving 60% of the revenue from FTS 2000, according to AT&T.

Since AT&T bid lower rates for FTS 2000 than did US Sprint, AT&T contends that federal government users are overpaying because they are assigned to the higher priced US Sprint network.

Ironically, MCI Communications Corp., the long-distance carrier that lost the bid for FTS 2000, also complained earlier this year that federal government users are being overcharged. But MCI says both AT&T and US Sprint are overcharging users.

MCI claims that the GSA has failed to properly enforce a provision that requires the carriers to keep FTS 2000 prices at or below commercial prices. To make its point, MCI filed a new tariff earlier this year with rates it says are as much as 40% below the FTS 2000 rates. MCI said it plans to woo away some government users. ■

## WilTel delivers on frame relay

*continued from page 1*

finer how data packets are transmitted between devices such as local-area network bridges, routers, T-1 multiplexers and packet switches.

It supports higher throughput and less network delays than X.25 by stripping off much of the error correction and routing protocols used in X.25 transmissions.

Frame relay services are expected to provide users with a more efficient means of supporting emerging wide-area data communications requirements, such as the need to link geographically dispersed LANs and support videoconferencing.

WilTel's frame relay service is based on StrataCom, Inc.'s IPX 32 fast packet multiplexers, which have been installed in the carrier's nationwide 11,000-route-mile digital microwave and fiber network.

WilTel will support multiple access speeds, but the physical connection must be made through a T-1 line. In comparison, Sprint Data Group, the packet network arm of US Sprint Communications Co., will offer 56K,

64K, fractional T-1 and T-1 access, and BT Tymnet, Inc. plans to initially offer 56K or 64K bit/sec access.

WilPak will support only permanent virtual circuits (PVC), meaning net paths are fixed between end points and user packets always follow the same route. Users that access the service at 256K bit/sec can support 56K, 64K and 128K PVCs, while users with 1.024M bit/sec access can support 56K, 64K, 128K, 256K and 512K bit/sec PVCs.

### First cities

The service will initially be delivered from IPX 32s in eight cities in the WilTel net: Atlanta, Chicago, Houston, Kansas City, Mo., Los Angeles, New York, San Francisco and Washington, D.C.

The carrier will pay the charge of backhauling user traffic over dedicated links from any of WilTel's 65 points of presence (POP) to one of the eight POPs with an IPX 32.

"This strategy will enable WilTel to give the service a ubiquitous presence without the expense of equipping every POP to support it," Lippis said.

Joe Zell, market research and product development manager for WilTel, said the carrier has no

immediate plans for 56K or 64K bit/sec access to WilPak. "This service isn't designed for tertiary sites with low-bandwidth data transmission needs. It's tailored for those who want to interconnect LANs at higher speeds."

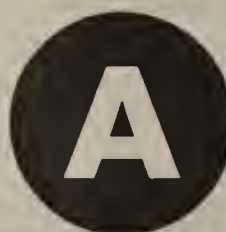
WilPak customers can use unassigned bandwidth on their T-1 access line to obtain other nodal WilTel services, including its fractional T-1 offering, Zell added.

To use WilPak, users need a router with a frame relay interface and a special channel service unit.

WilTel has launched a product certification program under which it will test different vendors' customer premises equipment for use with WilPak. To date, WilTel has certified Cisco Systems, Inc.'s LAN router with a frame relay interface, Zell said.

WilTel's frame relay service is compatible with the CCITT I.122 frame relay specifications.

Although WilTel declined to divulge pricing for WilPak, it said users will pay a flat monthly rate for the service and it will not carry a usage element. "We believe flat-rate pricing will make life easier for users because budgeting for a usage-sensitive high-bandwidth service is a killer," Zell said. ■



## Firms bypass Internet ban

*continued from page 2*

it is publicly funded, the Internet has rules prohibiting users from sending business information across the network.

Users welcomed the announcement of the vendors' Commercial Internet Exchange agreement, saying the change would spur greater network use.

"Today, we can connect from CERFnet to PSInet but we have to travel through the government's Internet, and there are restrictions for commercial users," said Peter Ho, senior staff network engineer at Brea, Calif.-based Unocal Oil Co., a CERFnet subscriber.

Ho, like other users, said it is often difficult to differentiate business and research data. He emphasized that the clients with which Unocal communicates clearly want to be free from the restrictions binding the government-funded networks.

### It's troublesome

The usage requirements have been troublesome, according to Gary Larson, computer operations manager at Emulex Corp., which has a 56K bit/sec link on CERFnet. "We are a development

company, and the restricted use clause comes into question a lot," he said. "We are often reluctant to pass on information." The Costa Mesa, Calif., company manufactures terminal servers and other network-based products.

"We've often made the decision not to put traffic on it," said Larson, noting that the new vendor agreement will allow corporate users to communicate freely because the Internet will no longer be the sole transmission path.

John Eldridge, director of sales and marketing for PSI, said the three vendors plan to install Cisco Systems, Inc. routers supporting the point-to-point protocol. Those routers will link the networks over T-1 lines in the San Francisco area. The three service providers will also establish a network support center.

Eldridge said he hopes the San Francisco link will be the start of future interconnection points in the U.S. He also noted that the link could appeal to users that shied away from the Internet due to data transmission restrictions.

"There's a set of people who wanted to subscribe to the Internet but didn't because of the acceptable use policies," Eldridge said. "The acceptable use policy is not an issue anymore." □

## American, SABRE pan plans

*continued from page 6*

for the CRS vendors from a technical perspective.

"From a technology point of view, there isn't anything I've seen that would create any major dollar expense or development crisis to meet the new guidelines," he said.

But David Schwarte, associate general counsel for American Airlines, said the proposals could actually hurt travel agents. Allowing any terminal to access any CRS would take away the incentive for the CRS to provide computer equipment to travel agents at discount prices, he said. Today, reservation network companies sell or lease equipment to travel agents at a discount with the expectation that the investment will be recouped via bookings.

Schwarte said the department's proposals will "help take market share away from us and Apollo, who got into the market first, and hand it for free to systems that weren't even in existence until six or seven years after we started."

American Airlines also complained about a Department of Transportation proposal that

would ban productivity clauses offering travel agents lower fees for higher reservation volumes. Terry Jones, vice-president of product development for SABRE, said such restrictions are applied to no other industry. Even AT&T, which has been subject to numerous restrictions, is allowed to provide volume discounts such as its Tariff 12 deal with American Airlines.

sues, said that tying multiple CRSs into a single terminal should be no difficult technical trick but it might cost the travel agents more for software. He warned that the benefits of funneling multiple CRSs into a single terminal may not be that great since agents can already access most airlines from any CRS.

"I don't know that a travel agency could cost-justify pur-

**"T**his microregulation is as severe as anything imposed on an industry that wasn't a monopoly."

▲▲▲

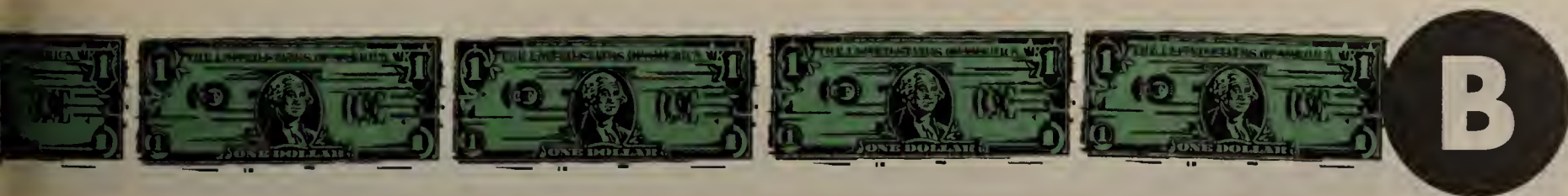
Jones said SABRE already provides mechanisms whereby users can access the internal reservation systems of about 19 airlines worldwide, including all the major U.S. airlines. "This form of microregulation, if adopted as proposed, is as severe as anything ever imposed on a U.S. industry that wasn't a 100% monopoly."

William Duffy, president of S,H&E, Inc., a consulting firm in Boston specializing in aviation is-

chasing the software associated with each CRS for the incremental benefits that could be obtained," Duffy said.

Jeff Held, a partner at Network Strategies, a consulting practice of Ernst & Young in Vienna, Va., said he understands the need for more competition in the CRS market but also agrees with American Airlines that the Transportation Department's proposals would effectively penalize it for being successful. □

# Other Modems Take You From A To B. Literally.



## IBM, AT&T join in net mgmt.

*continued from page 1*

Bill Gilbert, AT&T's director of network management, said, "This represents the critical next step — some might call it the leap forward — for our customers."

Users that employ both IBM and AT&T management systems were heartened by the announcement (see "Net mgmt. merger gets mixed reviews," this page).

**T**he new software will provide four types of links between the Integrator and NetView.

▲▲▲

"I welcome the interface," said Les Wright, integrated network project manager at General Dynamics Corp. in Fort Worth, Texas. General Dynamics uses both NetView and the Integrator but has also been using Systems Center, Inc.'s Net/Master because it can send Systems Net-

work Architecture alerts to the Integrator.

For its part, Systems Center said it will match the capabilities of the AT&T-IBM software with a product that will ship before that package. Digital Equipment Corp. said the alliance will be good for the industry as a whole (see "AT&T/IBM rivals react," page 49).

AT&T's Gilbert said the new software will provide four types of links between the Integrator and NetView. For the sake of expediency and compatibility with installed products, the companies decided to build the links using existing protocols.

No time frame was given for OSI support.

The links will support exchange of configuration data, the flow of SNA status data to the Integrator and Integrator alerts to NetView, and a remote command facility that enables a NetView user to issue commands to the Integrator (see graphic, page 1). A user can already control NetView from the Integrator console using a terminal-emulation function.

The first interface will support communications between the configuration data bases in IBM's Information/Management prod-

uct and in the Integrator. Information/Management, the fault-tracking tool under the NetView umbrella, includes a data base of

managed objects in an SNA net.

AT&T and IBM will provide software that serves as a data-transfer facility and maps object

formats used by one data base to the format used in the other, said Jack Drescher, program manager of network management alli-

## Net mgmt. merger gets mixed reviews

NEW YORK — News that AT&T and IBM will integrate their network management systems was met with open arms by most users and cautious optimism by others.

Interface software will be a welcome relief for users such as General Dynamics Corp., which currently employs AT&T's Accu-master Integrator, IBM's NetView and Systems Center, Inc.'s Net/Master, said Les Wright, integrated network project manager for the company in Fort Worth, Texas.

Today, the only way to send alerts from a Systems Network Architecture network to the Integrator is to use facilities supplied with Net/Master. General Dynamics, for example, uses NetView to manage its SNA network but runs five Net/Master components that filter out minor SNA alerts and send only major alerts to the Integrator.

"Our only alternative at the time we went into this [July 1990] was NetView/PC, and we didn't consider that a very attractive alternative," Wright said. The company will definitely consider the AT&T/IBM product, he said, because "We're a NetView shop and already have cost and manpower resources dedicated to NetView support."

Greg Lee, manager of the customized network services project for Chevron Information Technology Co. in San Ramon, Calif., said he's eager to learn more about the AT&T and IBM product. Chevron uses NetView to manage an SNA network that includes 26,000 logical units and uses the Integrator to manage its AT&T services, modems, multiplexers and private branch exchanges.

"The ability for those two to work very closely together to manage our total communica-

tions network is very encouraging," Lee said.

Doug Weber, district manager of corporate telecommunications at Southwestern Bell Telephone Co. in St. Louis and a NetView user, was more reserved. "It's interesting and encouraging, but I'm skeptical. It always remains to be seen how effective such agreements turn out to be," Weber said. "We're talking about getting two systems that are diversely oriented to cooperate with each other and provide a meaningful exchange of data."

Bob Schultz, senior consultant at the Blue Cross and Blue Shield Association in Chicago, said his company uses NetView and has been considering the Integrator. "Both AT&T and IBM are very important players in our network," he said.

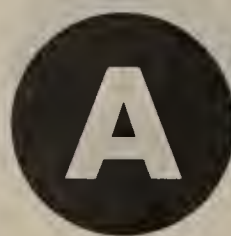
— Bob Brown and Paul Desmond

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ances at IBM. Initially, communications will be based on an LU 2 session and data will be exchanged in a batch file transfer. Later, the companies plan to upgrade the link to an LU 6.2 connection and a more dynamic file-transfer facility such as IBM's SNA Distribution Services, which can send updates between data bases in real time.

LU 6.2 will not be supported in NetView until Version 2 Release 2 is available in October, so LU 2 was chosen to make the facility compatible with the NetView installed base, Drescher said.

Another interface will handle the flow of SNA status data to the Integrator. It will be an addition to IBM's NetCenter, a graphics interface that also supports the display of management information from non-IBM devices. The host portion of NetCenter will collect status alerts from VTAM, map them into the AT&T Network Management Protocol (NMP) format and ship them via an LU 2 session to the Integrator.

That interface, which lets NetView be configured as an agent to the Integrator, is the only one of the four to be developed using NMP. NMP is AT&T's version of the OSI Common Management Information Protocol.

A third interface lets Integrator alarms be sent to NetView, effectively positioning the Integrator as a NetView agent, said Mike Dimler, application development manager at AT&T.

It is an extension to the Integrator's alarm correlation feature, which determines the most likely cause of a network outage.

**E**ach function is to be independent of the others but also to work together if required.

▲▲▲

Once that cause is found, the new facility will map the resulting alarm into IBM's Network Management Vector Transport format and send it to NetView via a Systems Services Control Point (SSCP)-to-physical unit session.

One other interface lets a user issue commands to the Integrator from a NetView console. It is also based on an SSCP-to-physical unit session and defines a set of

commands that can be invoked from a NetView console or embedded within an automated NetView routine.

Each function is designed to be independent of the others but also to work together if required. For example, a user could employ the command interface in conjunction with the configuration exchange facility to automate the exchange of configuration data.

Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C., said the alliance will add management of AT&T services to IBM's existing management capabilities.

He said the alliance will make AT&T more competitive in IBM accounts: NetView has a majority share of the net management market, and the Integrator needed a link to NetView in order to be acceptable to many IBM users.

Atul Kapoor, vice-president of the consultancy Kaptronix, Inc. in Haworth, N.J., called the deal a conceptual bombshell.

He said it will now be up to users to sort out which network devices they want to manage under each system, as well as whether one system will act as an agent to the other or if they will act as peers. ■

## AT&T/IBM rivals react

NEW YORK — Digital Equipment Corp. and Systems Center, Inc. last week labeled the AT&T/IBM net management alliance a positive development for the industry and pledged similar measures of their own.

Dale Vecchio, director of marketing for Net/Master at Systems Center, and Bill Gilbert, AT&T's director of network management, said the current relationship between AT&T and Systems Center will not change.

Systems Center sells the Unified Network Management Architecture (UNMA) Application, which is host software developed jointly with AT&T that converts Systems Network Architecture alarms into AT&T's Network Management Protocol format.

The UNMA Application supports two of the four functions that AT&T and IBM have pledged to address — configuration data exchange and the flow of SNA status data to the Accumaster Integrator.

In the next version, which

Vecchio said will be out before the AT&T/IBM software, Systems Center will address the other two functions: the ability to issue Integrator commands from a NetView console and the capability to send correlated alarms from the Integrator to NetView.

Digital Equipment Corp. said the alliance mirrors its strategic vendor program in which vendors have pledged products that support DEC's Enterprise Management Architecture.

Debra Curtis, network management marketing manager at DEC, said the alliance is encouraging for users. "Any kind of work that results in more openness and more interoperability makes the market freer and benefits the customer."

Asked if DEC is talking with AT&T or IBM about a similar agreement, Curtis replied, "Not specifically that we can talk about . . . Any work that might be going on behind the scenes that we haven't announced yet is not something I can discuss."

— Paul Desmond

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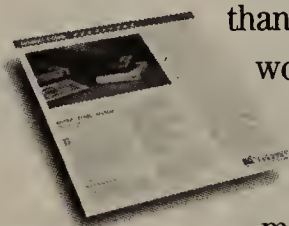
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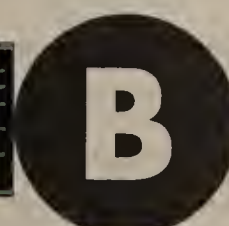
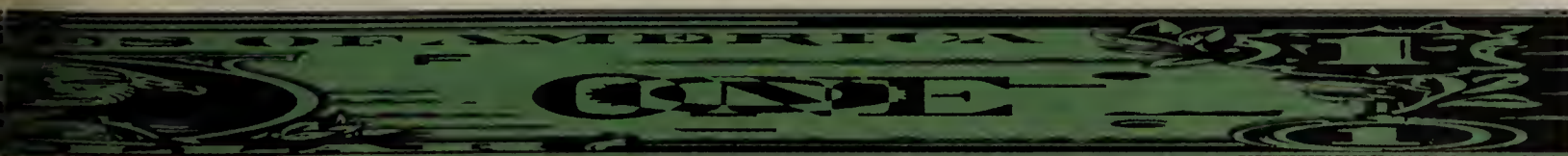
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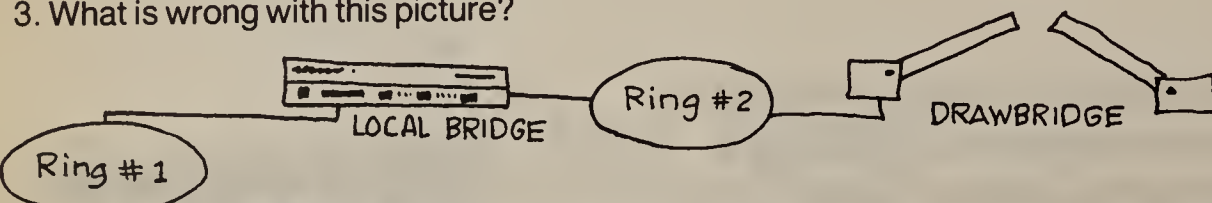
1. Would working in a field characterized by rapidly-changing technology make you paranoid and insecure?

- a. Sometime
- b. Never.
- c. Who wants to know?

2. If your co-workers were squabbling, what would you recommend?

- a. a compromise.
- b. a reassignment.
- c. a duel

3. What is wrong with this picture?



4. A computer sends information over a circuit with a 19.2 kbps throughput capacity at the rate of 19.2kbps to another computer receiving the data at 19.2kbps. What is the rate of information transfer?

- a. Let's bump this over to Accounting.
- b. Say, what was that kbps rate again?
- c. I'll let my staff get back to you on this.

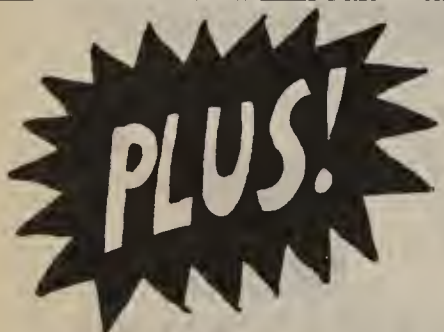
5. You are responsible for having purchased a networking system that within three months proved to be obsolete, unreliable and way over budget. Would you:

- a. Take the entire blame and attempt to rectify the situation,
- b. Recommend legal action based on deceptive selling techniques,
- c. Wear a false nose, moustache and eye-glasses to work every day until the mess blows over.

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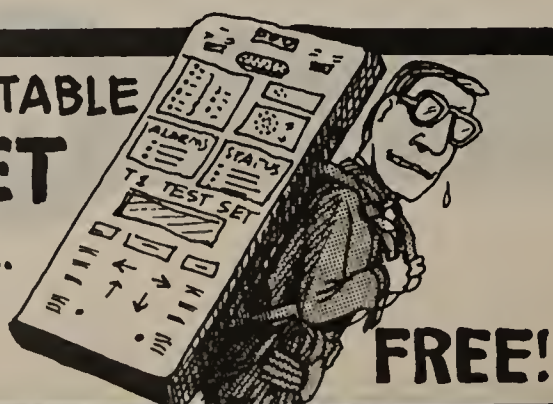
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## Iowa T-3 net is a hot potato

*continued from page 1*

work will depend on how the Iowa House of Representatives votes on it, how the state's governor handles the issue and whether the decision ends up in committee.

Although the network might be approved as proposed, the Senate decision could lead to the rejection of the current favored bid and require the network to go up for bid a fourth time.

As it stands, the state intends to award the network building contract to Kiewit Network Technologies, Inc. of Omaha, Neb., a sister company of bypass carrier Metropolitan Fiber Systems, Inc.

The state, however, has been under pressure by US West, Inc. and some of the other 150 local telephone companies in Iowa to review the bidding process as well as the design of the network.

These and other parties have questioned the fairness of making Iowa taxpayers foot the bill for a state-owned network, said Jeff Held, a partner at Network Strategies, a network consulting practice of Ernst & Young in Vienna, Va., which was engaged by the Iowa General Assembly to independently review the project.

The local telephone compa-

nies have also claimed that the high-speed links proposed to support some rural areas would be overkill and that existing compressed video services would be more suitable and less expensive than the full-motion video planned.

The network will augment existing microwave links used to support distance learning and will save Iowa \$5 million a year by replacing leased lines used to support the state's voice and data traffic, said Glen Anderson Jr.,

“Some say the Senate action is the end of the net, and some say it's good news.”



administrator for the Iowa Department of General Services' Division of Communications.

As it is now planned, the Iowa Communications Network would be anchored by a hub in the basement of a new armory being built at Camp Dodge, Iowa's National Guard headquarters about 10 miles north of here.

The state-owned fiber net would consist of hundreds of 45M bit/sec circuits running to more than 100 locations throughout Iowa. Over time, the network could reach out to more than 1,000 sites.

Phase 1 of the project calls for the installation of the hub and links to 15 community colleges and three universities via 2.4G bit/sec links, each with the capacity to support 48 simultaneous 45M bit/sec video channels. It is possible that 2.4G bit/sec links to another 20 or so private colleges would be added to this configuration.

In Phase 2, 565M bit/sec links would be run from each community college and university to as many as 12 surrounding learning centers, which might be high schools or remote college sites.

Phase 3, which is not included in the current bid, would extend the network to other points throughout each county, such as additional schools and government agencies. Iowa's many local phone companies are expected to be given the right of first refusal to build this portion of the network.

For now, however, what the network will eventually look like and when it will be built are still up in the air.

“Some say the Senate action is the end of the network, and some say it's good news,” said Tony Crandell, director of network services for the Iowa Department of General Services' Division of Communications. “We're not sure where we stand.”

## Apple wireless offer critiqued

*continued from page 6*

of Kentucky, voiced objections to the Apple proposal.

Warnecke emphasized the negative impact dislocation would have on Kentucky's microwave-based emergency warning system.

“In Kentucky, terrain makes alternative physical systems most impractical,” he said.

But other users voiced support for allocating frequencies for wireless LANs.

Scott Loftesness, senior vice-president of FMR Corp., the parent company of Fidelity Investments, told the FCC that Fidelity supports the Apple proposal. “High-speed data networking is fundamental to today's client/server information processing architecture,” Loftesness said. “Data-PCS offers real benefits to users by providing enhanced con-

nectivity in today's network environment.”

But Loftesness questioned whether the 40 MHz should be exclusively dedicated to data use. “Ideally, Data-PCS and voice personal communications services could dynamically share spectrum,” he noted.

### AT&T pushes for voice

AT&T also urged the FCC to consider including voice in its ruling.

“AT&T does not agree with Apple that allocation of 40 MHz should be limited to data applications because it is wasteful to dedicate a large block of scarce spectrum to such a niche application,” the long-distance carrier stated in its FCC comments. “Furthermore, Apple's petition fails to address the need for integrated voice and data solutions, which should be considered in any spectrum allocation for in-building wireless applications.”

## NCR, IBM judge Apple plan

Representatives from NCR Corp., IBM and the newly formed wireless local-area network standards group, the IEEE 802.11 Working Group, said they generally support Apple Computer, Inc.'s wireless LAN proposal but are critical of some of the technical details.

Last January, Apple asked the Federal Communications Commission to set aside 40 MHz of spectrum between 1,850 and 1,990 MHz for a wireless LAN data service it described in its petition as Data-Personal Communications Services (PCS).

The IEEE 802.11 group, formed last September under the IEEE 802 LAN standards committee, last week finalized its critique of the Apple proposal, criticizing many technical details. The 802.11 remarks face final approval by the IEEE 802 Executive Committee.

The 44-member 802.11 group is charged with creating a new wireless LAN standard. Members of the group include Apple, IBM, NCR, NEC Corp., Nynex Corp. and Toshiba America, Inc.

Jim Neeley, vice-chairman of 802.11 and an advisory systems analyst in IBM's LAN Systems Design unit, said the group has criticized Apple's selection of carrier-sense multiple access (CSMA) as the designated LAN access protocol for PCN services. “We think CSMA is a very inefficient access protocol,” Neeley said. The wireless LAN committee hopes to develop an isochronous protocol at least twice as efficient as CSMA.

Bill Stevens, manager of wireless communications research in Apple's advanced technology group, said CSMA

has limitations. “It was the position we wanted to take at the time. But we want to further understand the issues involved,” he said.

The question of whether spectrum should be set aside exclusively for data has also occupied 802.11 members.

In its petition, Apple said the spectrum allocated for its Data-PCS should not be shared with voice personal communications network (PCN) services because it could impose speed limitations on data transmissions. Apple also voiced concern about, among other things, the potential for voice signals interfering with data transmissions.

But in a filing with the FCC, AT&T called this statement incorrect, noting that at Bell Communications Research and in Europe, new digital wireless systems are being developed to simultaneously support both voice communications and high-speed data.

After a long debate, 802.11 members decided to keep their options open and change the key word “data” to “digital” in their FCC submission in order to indicate that the technology can be used to carry everything from data to voice, images, graphics and video, Neeley said.

The 802.11 group also took exception with Apple's spectrum requests. The group said it believes that 1,850 to 1,990 MHz is not the only spot on the spectrum appropriate for PCNs, indicating that anywhere between 1 and 3 GHz would be acceptable. The group also wants 70 to 140 MHz of bandwidth, more than Apple's 40 MHz request.

— Ellen Messmer

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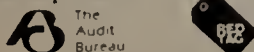
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